Announcement

THE AMERICAN WRITING PAPER CO.

of Holyoke, Mass., have sold their mills in Ohio and Wisconsin. As their agents, we can still offer for sale several of their Eastern mills, as follows:

Riverside Paper Co.
Divisions Nos. 1 and 3,
at Holyoke, Mass.

Chester Paper Co.
Division at Hunting, Mass.

Hurlbut Paper Mfg. Co.
Division at South Lee, Mass.

Oakland Paper Co.
Division at Manchester, Conn.

All of these mills are equipped for manufacturing.

GIBBS-BROWER COMPANY, INC.

PAPER and PULP MILL BROKERS

261 Broadway
NEW YORK CITY

166 West Jackson Street
CHICAGO, ILL.

OUR MOTTO: *SERVICE FIRST*

Vol. 8—No. 12

THE PAPER INDUSTRY

A. SCOTT DOWD
Editor

A MONTHLY EDUCATIONAL JOURNAL
Devoted to the Interests of the Pulp and Paper Industry
THOMAS J. KEENAN, Associate Editor, 18 East 41st Street, New York City

CONTENTS

FOR MARCH, 1927

Editorials		2017-2019-2021
Education in the Paper Industry	*B. H. Van Oot*	2065
Lessons in Paper Making—Lesson X	*Harry Williamson*	2069
How Suggestion Systems Operate		2072
Pointers for the Engineer	*W. F. Schaphorst, M. E.*	2075
Pacific Coast Opportunities for Kraft Pulp Manufacture	*B. T. McBain*	2076
Editorial Comment on Timely Subjects	*William Sibley*	2078
Safety Contest Scores		2080
Power Conference Notes		2080a
Power Requirements of Paper Mill Machinery	*S. A. Staege and C. V. Smith*	2080b
Report of Committee on Sulphate Pulp	*R. H. Stevens*	2080d
Practical Helps for the Mill Man		2080h
Fifty Years of Progress in Pulp and Paper Manufacture		2081
Old-Established Firms in the Paper Industry		2091
The Paper Business in Canada—An Industrial Romance	*Allen A. Lowe*	2176f
Fiftieth Annual Convention of the American Paper and Pulp Association		2177
Cost and Salesmen's Association Meetings		2201
Golden Anniversary Dinner		2205
Technical Association's Annual		2209
Woodlands Section Meeting		2221
National Paper Trade Association Holds Annual Convention		2223
Southeastern Superintendents Meet		2223
Future in Unlimited Sodium Sulphate Mine		2229
Canadian Section		2235
Opportunity Section		2264
Technical Developments in the Paper Industry		2267
Commercial Outlook		2275
Domestic Raw Materials		2277
Current Quotations		2283
Import and Export Markets		2285
Buyers' Guide		2295-2297-2299
Advertisers' Index		2301

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Cable address:
"Paperpulp," Chicago

Eastern Office: 18 East 41st Street, New York City
Telephone: Lexington 0337

MATHIESON Industrial Chemicals

The Importance of Quality Insurance

In most cases, the margin of difference between the price of a quality product and an inferior one is so small that it is unimportant. But in those instances where the difference is great, unwary buyers are apt to overlook the sinister meaning of such a differential.

Those buyers who have seen new brands appear suddenly on the horizon, and just as suddenly sink into oblivion, have learned that it is scarcely safe to experiment with the unknown. Rather than attempt to beat the market—rather than gamble with an untried product—they specify Mathieson EAGLE-THISTLE Chemicals, and thus insure the quality and uniformity of the materials required.

These purchasers are also awake to the fact that by buying direct from Mathieson, they are afforded the advantages of a highly developed customer-service—a service that embraces such all-important branches as traffic counsel, technical advice and warehousing facilities of the highest type.

CAUSTIC SODA
LIQUID CHLORINE
BICARBONATE OF SODA
MODIFIED VIRGINIA SODA
SODA ASH
BLEACHING POWDER
ANHYDROUS AMMONIA
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The MATHIESON ALKALI WORKS Inc.
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PHILADELPHIA CHICAGO PROVIDENCE CHARLOTTE CINCINNATI
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Paper Makers Felts and Jackets

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"They Satisfy"

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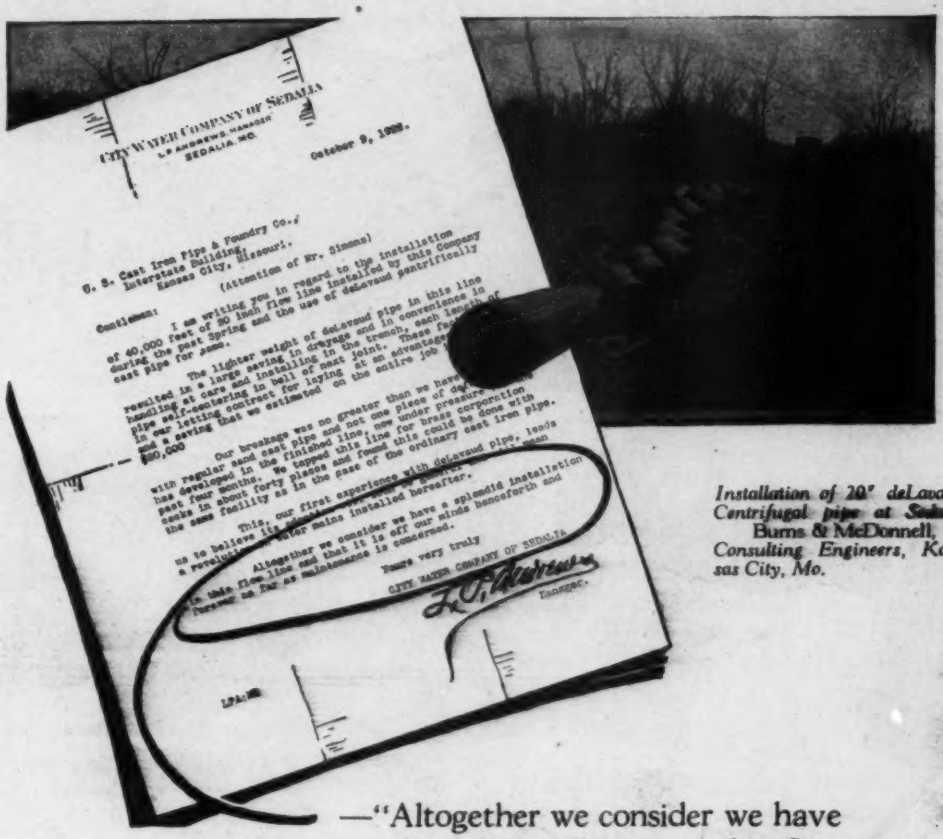
SKANEATELES FALLS, N. Y.

MANLY M. DeWITT
PRES'T. AND GEN. MGR.



Installation of 20" deLavaud Centrifugal pipe at Sedalia
Burns & McDonnell,
Consulting Engineers, Kansas City, Mo.

—"Altogether we consider we have a splendid installation in this flow line and that it is off our minds henceforth and forever as far as maintenance is concerned."

Write for special literature covering specifications, uses and manufacture of deLavaud Centrifugal pipe.

United States Cast Iron Pipe and Foundry Company

General Offices:
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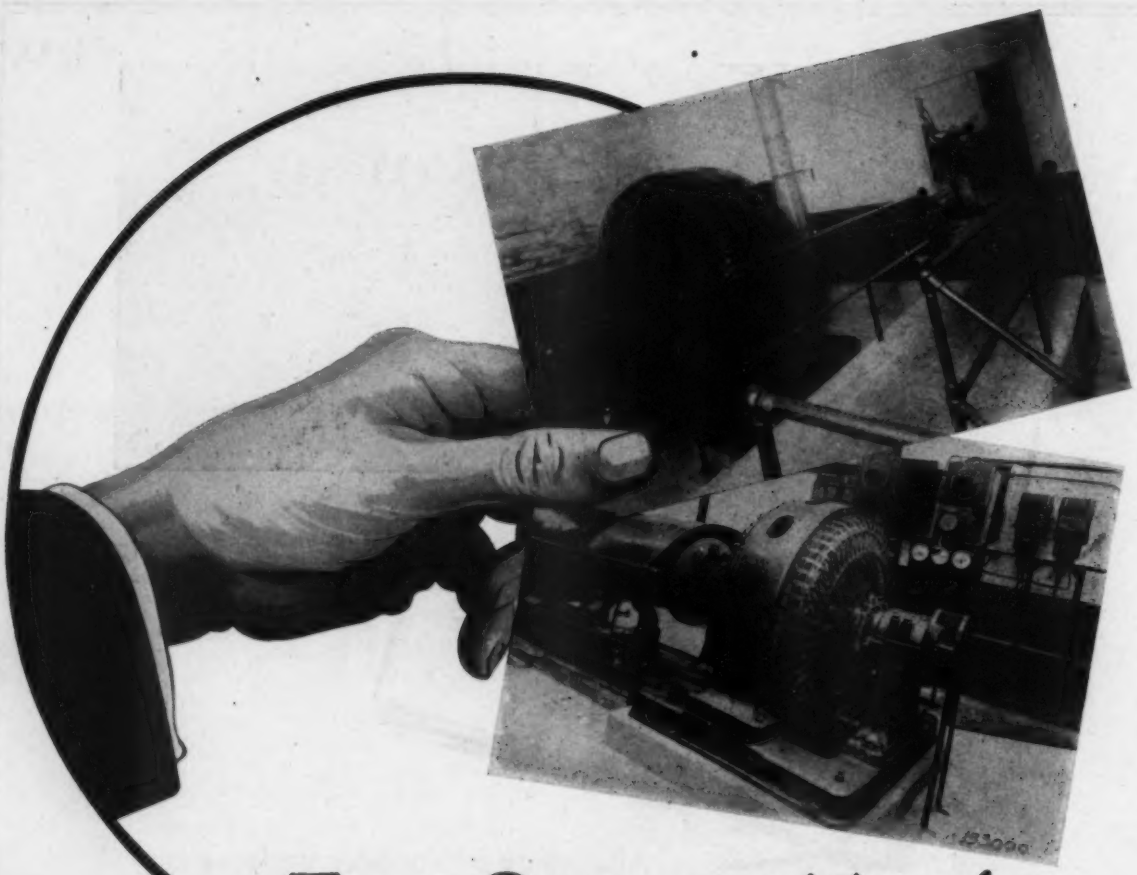
Birmingham: 1st Ave. & 20th St. Pittsburgh: 6th & Smithfield Sts.
Buffalo: 957 East Ferry Street Dallas: Akard & Commerce Sts.
Cleveland: 1150 East 30th Street Kansas City: 13th & Locust Sts.
Minneapolis: 6th St. & Hennepin Ave.



Two Opportunities *for* Balanced Power Factor

PULP grinders and Jordans are particularly adapted to synchronous motor drive. The synchronous motor can be set for a leading power factor *balancing* the lagging power factor of the induction motors. The improved power factor uses the transmission equipment more efficiently and obtains a better power rate.

The use of Westinghouse synchronous motors for these machines carries on into the application the ***balance*** found in all Westinghouse motor construction. Every element of design—electrical and mechanical—has been considered in relation to every other element and with the job to be performed. The result is a sturdy frame, long-wearing bearings, high efficiency, and low maintenance—a motor that will furnish economical power day after day without faltering.

Westinghouse Electric & Manufacturing Company
East Pittsburgh Pennsylvania
Sales Offices in All Principal Cities of the United States and Foreign Countries

Westinghouse
X91132
Synchronous Motors

What Advantage Has this New Westinghouse Achievement

— the Starting Generator System?

IN this new Starting-Generator system, the power for starting is taken from a separate starting generator. The starting load is completely removed from the main generator.

The starting generator furnishes power for starting, inching, and accelerating at low voltage instead of reducing the high-voltage power by resistance. Low-voltage starting reduces the power peak, provides smooth, positive, slow-speed operation—regardless of the voltage at the main generator—and assures safe, uniform starting.

Question No. 6

About Sectional Paper Machine Drive

What questions have you to ask about sectional drive? Our nearest district office will gladly answer them.

The starting generator system eliminates all starting drums and resistors, and greatly simplifies and reduces the size of the control board.

The many important advantages in this latest improvement in sectional paper machine drive deserve your interest. Full information can be obtained from the nearest Westinghouse district office.

Westinghouse Electric & Manufacturing Company
East Pittsburgh Pennsylvania
Sales Offices in All Principal Cities of the United States and Foreign Countries

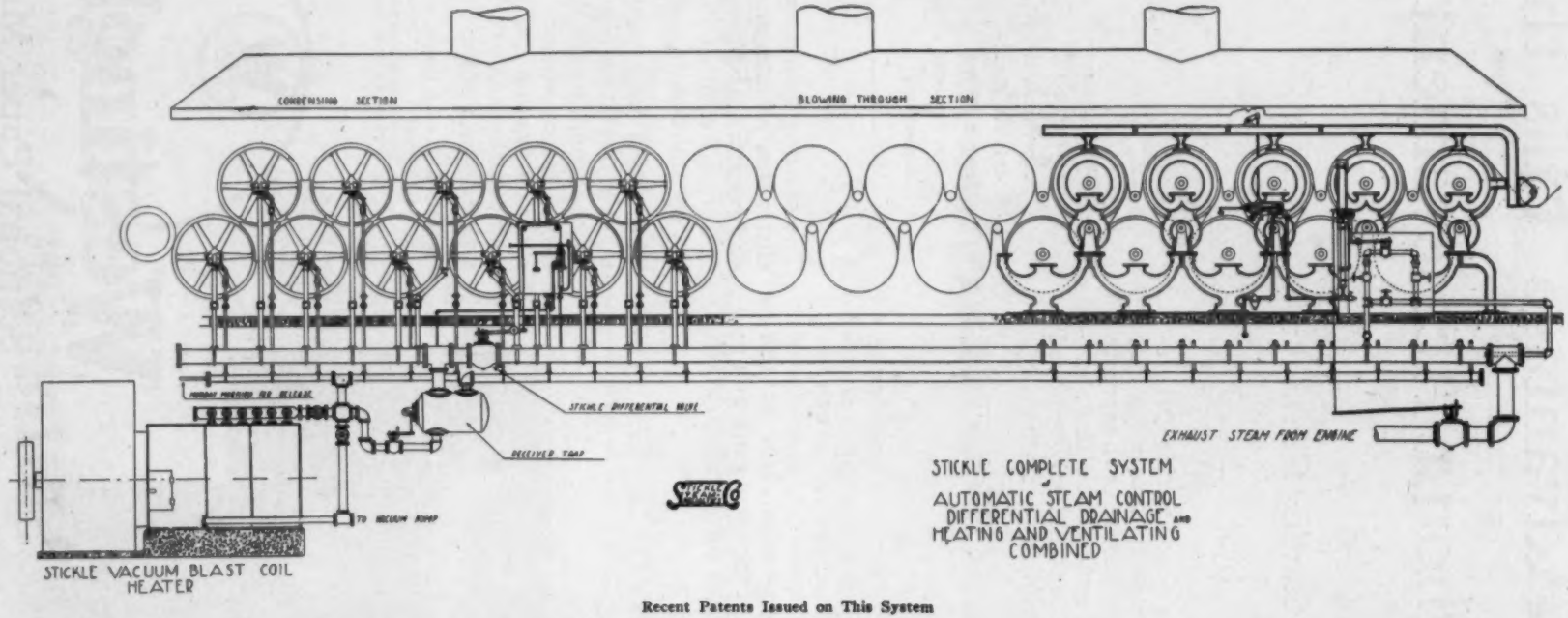
Westinghouse

X91060

Sectional Paper Machine Drive

STICKLE COMPOUND CONDENSING SYSTEM
FOR THE PAPER MACHINE

This system consists of Automatic Steam Control, Rapid Circulating Differential Drainage and Vapor Vacuum Blast Coil Economizer for Heating and Ventilating the Machine Room.



Recent Patents Issued on This System

The Stickle Vapor Vacuum Blast Coil was designed to utilize the high temperature condensation from the dryers, to heat and ventilate the machine room and at the same time to maintain a vacuum on the discharge line from the dryers. This is another step in the right direction to complete an ideal drainage system for removing the air and condensation from the dryers.

Ask for Booklet 20B

STICKLE STEAM SPECIALTIES CO., INDIANAPOLIS, IND. U. S. A.

The 4 Ply Lock-Seam Strengthens the Length

Naylor Spiral Lock Seam Pipe is not rolled, but is *wound under great tension upon a lathe turned arbor* while the edges are interlocked into a stiff, tight four-ply seam—as round as the arbor upon which it is turned.

Naylor construction with the four-ply seam laid up on the outside to absorb the blows of rough handling, and to strengthen the length makes possible unusual inside and outside pressure resistance. It is of ample strength for extensive pipe runs, and can be used to carry heavy loads between distant supports.

Naylor Spiral Pipe is used in many paper plants on Beaters, Bleachers, Stuff Chests, Jordans, and other process lines. Because of the smooth inside, a power saving of 15 to 20 per cent is effected, and clean pulp assured. Let us send a sample section so that you can see for yourself the advantages of Naylor construction. Your request will be appreciated and promptly acknowledged.

Naylor Spiral Pipe Company
1242 East 92nd Street, Chicago

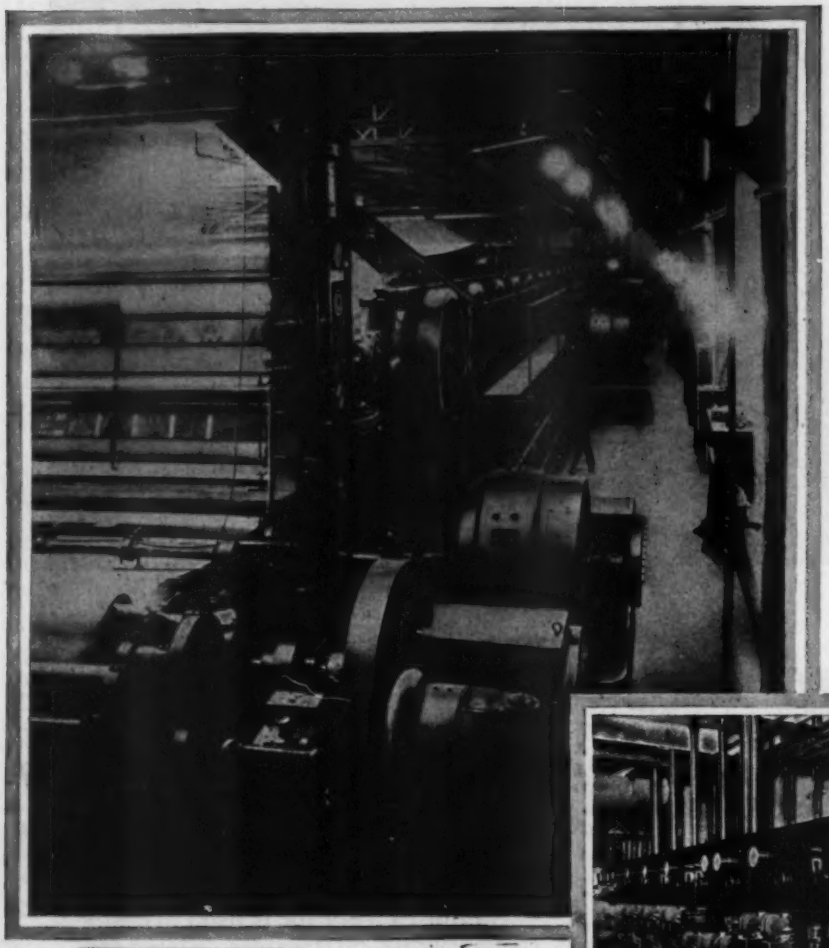
26 Cortlandt St.
New York City

1367 East 6th St.
Cleveland

Witherspoon Bldg.
Philadelphia

Naylor Spiral Lock-Seam Pipe

Last year the industry purchased



A G-E Sectional Unit, in this installation, showing the direct-coupled type of motor

G-E Control Switchboard for the sectional drive in this installation

G-E Sectional Drive on a 156-inch, 1000 f.p.m. paper machine in a New England paper mill

Apply the proper G-E motor and the correct G-E controller to a specific task, following the recommendations of G-E specialists in electric drive, and you have G-E Motorized Power. "Built in" or otherwise connected to all types of industrial machines, G-E Motorized Power provides lasting assurance that you have purchased the best.

Motorized Power
—fitted to every need

GENERAL

GENERAL ELECTRIC COMPANY, SCHENECTADY, NEW YORK

11 more G-E Sectional Drives

Oregon Pulp & Paper Co.	3 (Repeat Order)
Canadian International Paper Co.	4 (Repeat Order)
Longview Fibre Co.	1
Everett Pulp & Paper Co.	2 (Repeat Order)
Brown Paper Co.	1

32 other G-E Installations

Crown Willamette Paper Co.	1	Consolidated Water Power & Paper Co.	2
Ontario Pulp & Paper Co.	1	Central Paper Co.	1
Kimberly Clark Co.	2	Southern Paper Co.	1
Mead Pulp & Paper Co.	2	Tonawanda Paper Co., Inc.	2
Spanish River Pulp & Paper Mills, Ltd.	1	Saranac Paper Co.	1
P. H. Glatfelter Co.	1	Canadian International Paper Co.	8
Kalamazoo Vegetable Parchment Co.	1	Wayagamack Pulp & Paper Co., Ltd.	2
Oji Paper Co. (Japan)	1	St. Regis Paper Co.	1
Oregon Pulp & Paper Co.	1	Everett Pulp & Paper Co.	1
Warren Mfg. Co.	1	Great Northern Paper Co.	1

These Installations express the Confidence of a Continent in G-E Sectional Drives

G-E paper mill specialists will give you complete information as to the application of sectional drive to any type of paper machine.

237-14

ELECTRIC

SALES OFFICES IN PRINCIPAL CITIES

For the Big
The SKF

FACTS!

SKF Spherical Bearing on Railway Journals

1. The SKF Spherical Bearing was the first successful anti-friction bearing to be used in the journals of a standard American railroad passenger coach. That was in 1921.

2. A number of standard American railway cars, equipped with SKF Spherical Bearings, have covered *more than one-half million miles* without bearing adjustment and with the bearings showing no appreciable signs of wear.

3. SKF Spherical Bearings are in use today on more than seven thousand standard railway passenger cars, cafe cars, diners and auxiliary railway equipment throughout the world.

• • •

The performance of this bearing in heavy railway work over a long period of years is the thing which is responsible for the present interest in anti-friction bearings on railway journals.

© 1927

ANTI-FRICTION BEARINGS

BRUTE Jobs of Industry
SPHERICAL BEARING

HERE is an anti-friction bearing that was MADE to do the big jobs of industry —the heavy jobs—the brute jobs.

On the great bulking monsters that grind the pulpwood that gives us our daily newspapers.

On the giant crushing rollers in flour mills. On rock crushers, coal crushers—on ALL Jobs that demand rugged, unfailing performance under the severest service conditions that a bearing can be called upon to meet—

These are the jobs on which this SKF Spherical Bearing has been functioning for years—the jobs on which its stamina, its ability to take punishment have been proved!

The SKF Spherical Bearing is not a new bearing. SKF would not endorse it if it was. It is time-tested. It has been used for years in the journals of standard American railway passenger coaches. The railway journal application of anti-friction bearings considered, at one time, the supreme test of bearing stamina is far from representing the maximum of punishment that this bearing will take.

But, lately, industry has discovered in this bearing qualities that no other anti-friction bearing possesses.

It is the only heavy-duty roller bearing that approaches the anti-friction qualities of the ball bearing.

It is practically the only roller bearing ever produced for combined radial and thrust load that is made as well as a ball bearing is made, from the standpoint of materials, workmanship and finish.

And, so, SKF offers this bearing to industry for any job that is worthy of its steel—for the big job—the brute job. For, this bearing, alone, has proved that it could *stand up* not in the laboratory, not on paper, but through years of actual gruelling service under conditions that caused all other bearings to fall down.

Your bearing problem may require the SKF Spherical Bearing—or it may demand a bearing of an entirely different type. Whatever your problem is, put it up to SKF with the assurance that you will receive unbiased bearing counsel. For SKF makes an anti-friction bearing for every need known to industry.

SKF

More than 100 factory offices throughout the world

SKF
Puts the Right Bearing in the Right Place

SKF INDUSTRIES, INC. - NEW YORK CITY

1781

FOR EVERY PURPOSE

LEADING PAPER MIL
ENDORSE "M &

Quantity and Quality Production Decide Choice

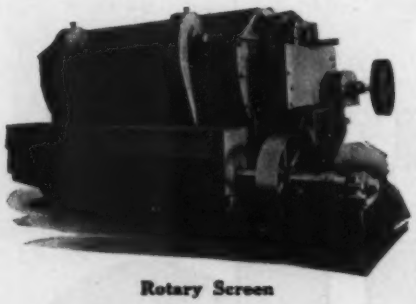
Heavy Type 4-Drum Winder

The Four-Drum Winder De Luxe

"Moore & White" Winders make smooth, even sheet. They waste little paper

Six hundred Winders in operation on all grades of paper. "Some" Winder, you say. It is indeed a wonderful Winder. One mill thinks so well of them they ordered up-to-date something like fifty. Good, hard rolls without wrinkles. The only wrinkles around the mill will be those on the winder man's face when he smiles as he thinks of the trouble "Moore & White" Winders save him, by their ease of operation, beautiful rolls they make, accessibility for cleaning, etc. The "best Winder on the market today," said one of our enthusiastic friends. It's true. Made in four-drum, two-drum, and supercalender types.

West Va. Pulp & Paper Co.
Crocker, Burbank & Co.
Paul A. Sorg Paper Co.
Champion Coated Paper Co.
Kalamazoo Paper Co.
S. D. Warren & Co.
Hammermill Paper Co.
North Star Strawboard Co.
Lawless Bros. Co.
Lowe Paper Co.
Pioneer Paper Co.
Paperboard Corp.
Gardner & Harvey Co.
Fort Wayne Corrugated Paper Co.
Mac Sim Bar Paper Co.
Arrowhead Mills
Falulah Paper Co.
Paraffine Company
United Paperboard Co.
Terre Haute Paper Co.
Congoleum Co.
Ohio Box Board Co.
Eddy Paper Co.
Hinde & Dauch Paper Co.
Ball Bros.
American Coating Mills
Dill & Collins Co.
New York & Penna. Co.
Miami Paper Co.



Rotary Screen

"M&W" Rotary Screen Solves Screening Problems

The Moore & White Rotary Screen will solve your screening problems in a manner that will leave nothing to be desired. Absolutely clean paper, no lumps, low horsepower consumption, no time lost washing up—these features will appeal to the wise paper mill manager.

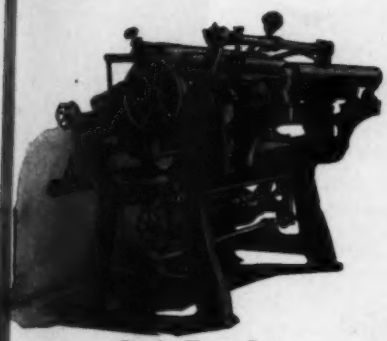
West Va. Pulp & Paper Co.
Container Corp. of America
Champion Fibre Co.
Falulah Paper Co.
Michigan Paper Co.
Everett Pulp & Paper Co.
Detroit Sulphite Pulp & Paper Co.
New York & Penna. Co.
Marinette & Menominee Paper Co.
Dill & Collins Co.
Paul A. Sorg Paper Co.
Miami Paper Co.
Crocker, Burbank & Co.
Merrimac Paper Co.
Wardlow-Thomas Paper Co.
Dunn Sulphite Co.
Bemis Bag Co.
Cherry River Paper Co.
Tarentum Paper Co.
Chillicothe Paper Co.
Champion International Co.
Chapin & Gould Paper Co.
Warren Mfg. Co.
Miamisburg Paper Co.

THE MOORE &

NO. PHILA. STATION, PENNA. R. R. *42nd*

LS OF UNITED STATES W" EQUIPMENT

Always Dependable In All Ways Say These Mills

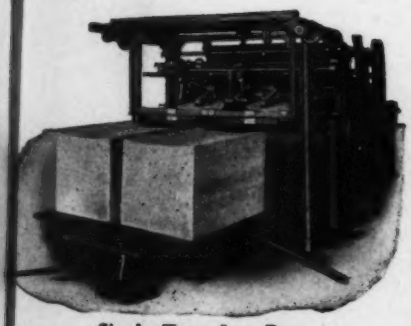


Single Type Cutter

Cutters That Really Cut Costs as Well as Paper

Speed and accuracy—those are the two words that mean much to the Superintendent when he thinks of paper cutters. "M&W" Cutters are somewhat higher priced than other Cutters on the market. That we will admit. Considering construction, quality of work produced, long life, they are a paying investment for the man who wants the best. Made in single, duplex and diagonal types.

American Writing Paper Co., Holyoke, Mass.
D. M. Bare Paper Co., Roaring Spring, Pa.
Cherry River Paper Co., Richwood, W. Va.
Chemical Paper Mfg. Co., Holyoke, Mass.
Martin Cantine Co., Saugerties, N. Y.
Crocker, Burbank & Co., Fitchburg, Mass.
Crown-Willamette Paper Co., Portland, Oregon
Columbian Paper Co., Buena Vista, Va.
Curtis Publishing Company, Philadelphia, Pa.
Chillicothe Paper Co., Chillicothe, Ohio
Dill & Collins Co., Philadelphia, Pa.
Hawley Pulp & Paper Co., Oregon City, Oregon
International Paper Co., New York, N. Y.
Jessup & Moore Paper Co., Wilmington, Del.
Kimberly-Clark Co., Neenah, Wis.
New York & Penna. Co., New York, N. Y.
Oxford Paper Co., Rumford, Me.
Oregon Pulp & Paper Co., Salem, Oregon
Strathmore Paper Co., Mittineague, Mass.
Schmidt & Ault Paper Co., York, Pa.
Tarentum Paper Mills, Pittsburgh, Pa.
Union Mills Paper Mfg. Co., New Hope, Pa.
Warren Mfg. Co., Milford, N. J.
Westfield River Paper Mfg. Co., Russell, Mass.
West Va. Pulp & Paper Co., New York, N. Y.



Single Type Lay Boy

A Machine That Saves Time and Labor

Not a hen, but a "layer" that can pile paper mighty fast

"Moore & White" Lay Boys lay the paper faster and more accurately than human operators, at a great deal less cost. Since first introduced to the trade, they have met with great success, repeat orders coming in right along in large numbers. They have been a real boon to the paper industry. Single, duplex and diagonal types.

Brown Co., Berlin, N. H.
Martin Cantine Co., Saugerties, N. Y.
Champion Coated Paper Co., Hamilton, Ohio
Crocker, Burbank & Co., Fitchburg, Mass.
Dill & Collins Co., Philadelphia, Pa.
Falulah Paper Co., Fitchburg, Mass.
P. H. Glatfelter Co., Spring Grove, Pa.
Groveton Paper Co., Groveton, N. H.
Hammermill Paper Co., Erie, Pa.
International Paper Co., New York, N. Y.
Kimberly-Clark Co., Neenah, Wis.
Miamisburg Paper Co., Miamisburg, Ohio
Monadnock Paper Co., Bennington, N. H.
New York & Penna. Co., New York, N. Y.
Watab Pulp & Paper Co., Sartell, Minn.
Walther Mfg. Co., Brooklyn, N. Y.
West Va. Pulp & Paper Co., New York, N. Y.

WHITE COMPANY

Year

PHILADELPHIA, PA., U. S. A.

ELECTRO BLEACHING GAS CO.
MANUFACTURERS OF
Liquid Chlorine
9 EAST 41ST STREET
NEW YORK

E. D. KINGSLEY
PRESIDENT

February 21st,
1927.

To the Convention of the
American Paper and Pulp Association;

This annual gathering of paper mill executives marks the passing of another milestone in the progress of a great and essential industry.

You are to be congratulated upon the possession of the spirit which overcomes obstacles, not the least of which are technical problems; and upon the employment of scientific methods to keep paper manufacturing advancing to an upward place.

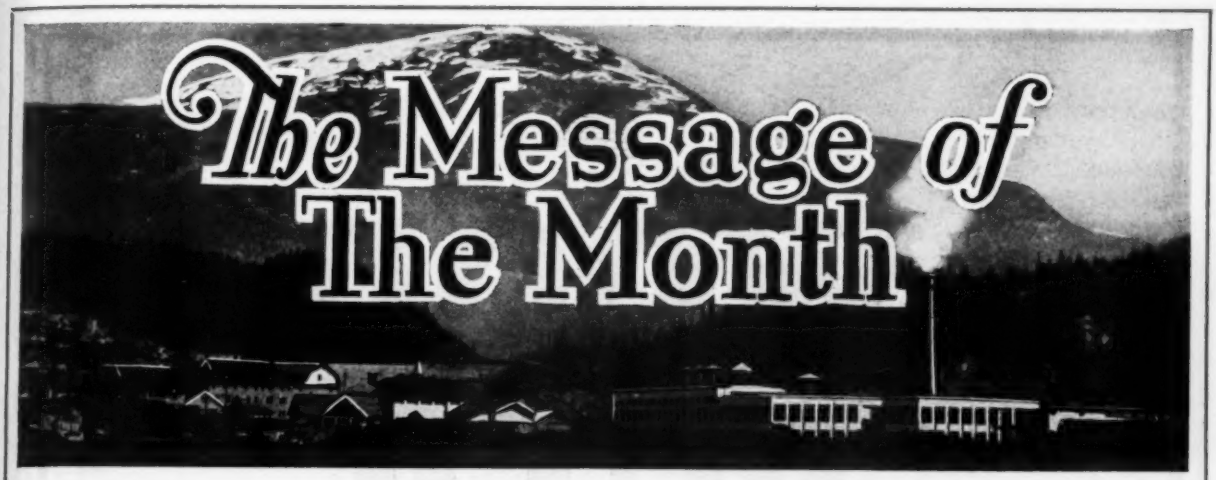
That we have been allowed to co-operate with you in introducing a two-sided factor in paper making - economy and improvement of product - is a source of gratification. The expressed satisfaction of leaders of the industry leads us to believe that we have been successful.

May we take this occasion to, thank you for the good will and patronage extended us, and to wish for you the influence and accomplishment which the industry so richly deserves?

Cordially yours,

ELECTRO BLEACHING GAS COMPANY.

E. D. Kingsley
President.



The Hope of the Industry Is Profit

THE annual meeting of the Paper Industry at New York last month was a remarkable affair. The combination of the annual meeting of all divisions of the industry, together with the celebration of the 50th anniversary of the American Paper and Pulp Association, served to bring out the largest attendance on record.

Now, the feature that made this a most remarkable convention was the consideration of but one factor to the practical exclusion of everything else, and that was **making a profit.**

For the past five years, the marketing of paper by both mills and merchants has generally been unprofitable, the evidence of which is found in the annual statements of some of the largest producers of paper and from the general complaint of lack of profit by the distributors and merchants throughout the country. For the past two years, however—1925 and 1926—the volume of business handled by both mills and merchants has been the largest on record, and tonnage demands have increased in spite of the hand-to-mouth buying.

From a standpoint of volume of business, both mills and merchants have had nothing to complain of, but from a profit standpoint, they have had everything to cry about, for in the main, they all handled a big tonnage at practically no profit. What's the reason?

That's what the merchants during the past two years have endeavored to find out, and from all reports, have reached the solution.

First, the merchants discovered that they were doing a retail business at wholesale prices that shot profits clear into the red. The volume of business going through their books in small orders was simply astounding and losses on them, simply bankrupting.

That needed correction. A campaign of education on profit making has been carried successfully forward until now, and all up-to-date paper merchants know just what mark-up on cost and quantity is necessary to ensure profits.

Next in line as profit losers, was the selling of poor grade papers from Maverick makers; in other words, the wholesaling of poor quality merchandise at cut prices.

The obvious remedy for this practice is the cutting off from distribution all unstandardized, unprofitable lines whether they be paper, bags, boxes or cordage.

This puts a perfectly proper proposition up to the mills and producers of non-profitable grade of merchandise. For, if the producer will not make a quality with a standard basis and at stable price, he shall find it hard to obtain an avenue of distribution. No merchant can afford in these days to put into stock a grade of merchandise upon which he cannot be insured a legitimate profit. Every merchant and distributor realizes today his only opportunity to make a profit is on merchandise of known and proven value.

The merchants have shown most commendable initiative. Their leadership will be rigidly supported by all mills and manufacturers having the upbuilding of the industry generally and their own organizations at heart, for paper consumption is growing and will continue to expand with tremendous leaps and bounds.

It is an essential industry.

Everybody must have paper.

Everybody uses more paper every year.

WOOD PULP AGENTS

PRICE & PIERCE, LTD.

17 East 42nd Street

New York City

E D I T O R I A L

Everybody producing and supplying paper to the consumers is entitled to a legitimate profit. Profit is the yard stick of the measurement of a successful industry or firm. A bankrupt industry or company in the industry is a blow to society.

We are all in favor of making a profit. Therefore, more power to the paper merchants for their courageous example and initial work.

Every mill and producer must fall in line. The hope of the Industry is **profit.**

Making the Best of Opportunities

AS far back as man can remember, the statement has been made that chances for advancement in the work which they have undertaken, or real opportunities for them, are not nearly so good as at some previous time. We believe there are greater opportunities today for a man who has real ability and is willing to work, and keep everlastingly at it than there ever was in the past.

Several illustrations have come to our notice recently, which might be worthy of emulation by many men in our industry.

One of the best known railroad presidents during recent years was C. H. Markham, who for a number of years was president of the Illinois Central Railroad, but is now chairman of the board of this railroad company. His career, extending over thirty-eight years of actual railroad experience, shows what can be done, for he rose from the position of section hand to the highest honor that the company could bestow. With only the aid of a common school education, but with the exercise of remarkable energy and concentration of purpose, he succeeded to the goal he had before him.

Another illustration which comes to mind is that of Eugene M. Stevens, who was recently elected president of one of the largest banking institutions in Chicago, the Illinois Merchants Trust Company. This man is said to have been in the banking business for only ten years. He is noted for his unaffected cordiality which puts every visitor to his office at ease, and this, along with hard work, is the key to the story of a boy who thirty-odd years ago went to work at the time-keeper's desk with a company making wagons in Minnesota.

Showing what it is possible to do, when one is determined to succeed and has the right stuff in him, is exhibited in the recent election of officers of the Standard Oil Company of Indiana. Rising from jobs in the streets, in the railroad yards and in the ante-rooms of other peoples offices, is not the case of the three new officers of this big company which seems quite easy from story books as they customarily make such achievements appear, nor was it done over night. It was done, however, in all three cases by hard work and a determination to succeed.

Edward G. Seubert, the man who was elected president of the Standard Oil Company of Indiana, was a news-boy, thirty odd years ago, on the streets of Syracuse, New York, while Robert H. McElroy and Edward J. Bullock, both of whom were elected vice presidents of the company, started at the bottom of the ladder.

Mr. Seubert's climb has been remarkable, but it is an example of what is being done every day in this country by men of grit and determination to succeed. As a boy, his family moved to Whiting, Indiana, where he attended public school for a while, but quit to go to work for the Standard Oil Company. Later he became a mechanic, then general clerk, cashier, member of the accounting department, chief clerk of manufacturing department, auditor of manufacturing department, assistant secretary and treasurer, secretary and treasurer, member of the board of directors, vice president, and now president. He could not have been the type of man that complains about the amount of work that he has to do nor the number of hours that it is necessary to devote to his work. Men of this kind are not only capable but always willing to give every ounce that is in them to their present position, irrespective of what it may be.

A final illustration is that of the man who was recently elected president of the American Paper and Pulp Association in New York. D. Clark Everest is a tireless worker. We believe that the truth is expressed when we say that every man who comes in contact with Mr. Everest is his friend, just because he is that type of a man. Not many years ago, the writer well remembers when Mr. Everest was connected with a small firm in Chicago that sold paper mill supplies, that the interests having in mind the building of the Marathon Paper Mills at Rothschild, Wisconsin, saw in him the ideal man to manage this plant. He was offered the position of secretary and manager, which he accepted, and since that time his rise in the industry has been rapid. This genial, splendid gentleman, is ever ready and willing to devote his

"Good Pulp *for* Good Paper"

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CASTLE
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Easy Bleaching Sulphites

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Unbleached Sulphites

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EDITORIAL

time, energy and money for the up-building of the whole paper industry.

Mr. Everest today is not only secretary and manager of the Marathon Paper Mills, but president, manager, or director of possibly a half dozen other companies, and yet he finds time to belong to many organizations for the up-building of the paper and pulp industry, as well as to become president of the American Paper and Pulp Association.

There never was a time in the history of the paper industry or in the history of this country when opportunities were so numerous for men to do real constructive things, as there is today. We believe the paper industry is on the verge of a great change in its methods of manufacturing paper and doing business, and there are tremendous opportunities for real figures and real hustlers, but little opportunity for the man who is afraid to do more than he is paid to do, or is fearful that he will devote more than a certain number of hours to his work. The old saying is ever new that vouches:

"Unless we do more than
we get paid for,
We never get paid for
more than we do."

The Fiftieth Anniversary

THE week of February 21 was one of most tremendous importance in this, the best of all the American industries. The management of the American Paper and Pulp Association, as well as some of the branch associations, had done their work well, and everything went off smoothly to the benefit, we believe, of every man who attended any of the meetings in New York.

The American Paper and Pulp Association has grown to be a tremendous force for good in this industry, and it seems too bad that every mill in America is not listed in the membership.

Dr. Baker and his assistants are to be commended for the way the meetings were handled, and the American Paper and Pulp Association, as well as the industry as a whole, is to be congratulated on having such an efficient and tireless worker as Dr. Baker in the office of secretary.

We do believe that more of the paper manufacturers in this country should realize the tremendous good that is being done for them by this association, and this means the ultimate good of the entire industry.

A Veteran Papermaker

THERE is one paper manufacturer in the United States to whom the golden anniversary of the American Paper and Pulp Association meant more than to perhaps anybody else. This man is George A. Whiting, Menasha, Wisconsin, who was present at the organization meeting of the Association in Saratoga, New York, in the summer of 1878.

These fifty years are rich in reminiscence for Mr. Whiting, as he and the industry's national association virtually started out together as youngsters, and have achieved remarkable success.

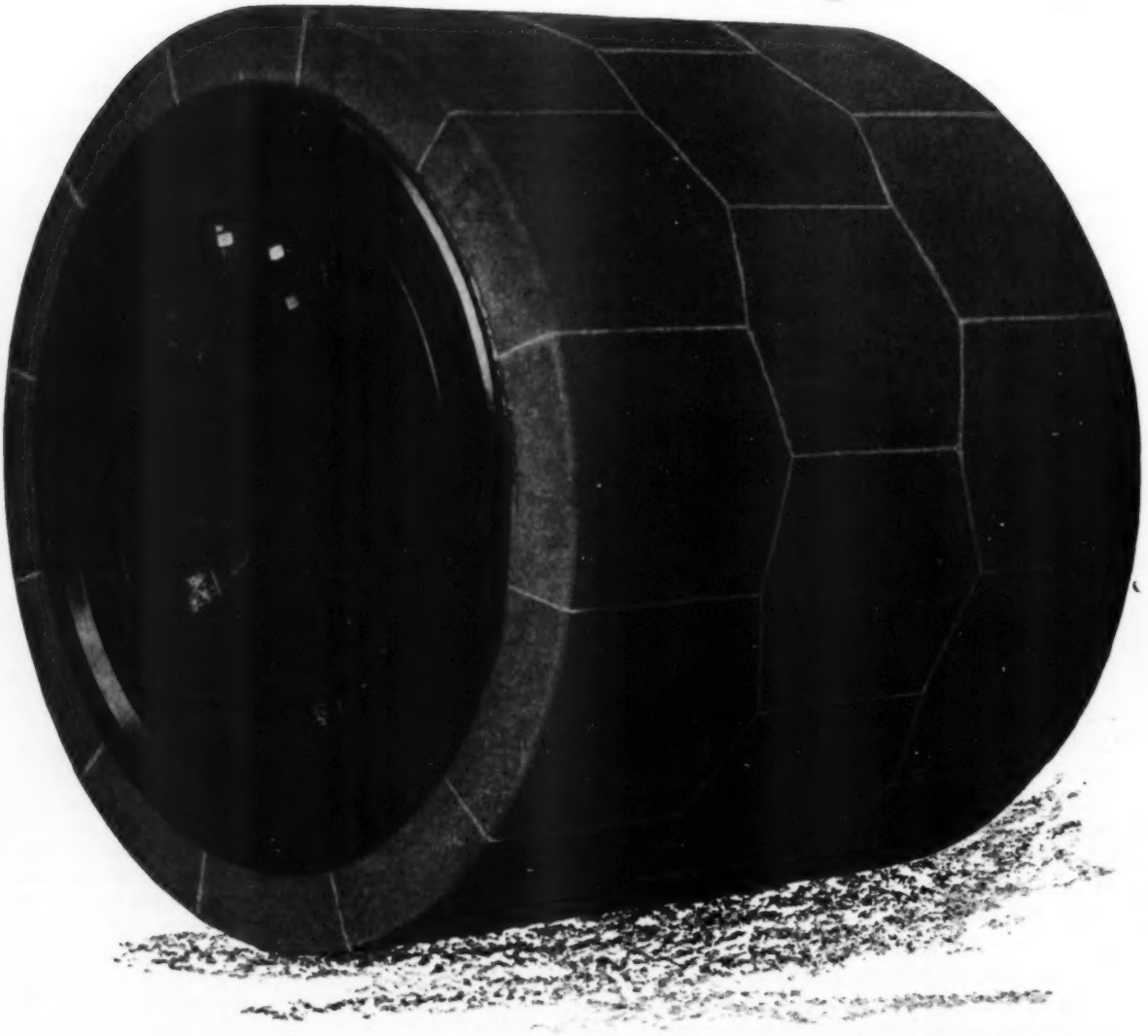
With only half a dozen summers in the paper industry behind him, Mr. Whiting took a prominent part in the organization activities, for he was a member of the committee which made the tentative plans for this body. He believed in the Association and its possibilities from the start. Its work has always had his active support, and has made good on his early conviction that many difficulties within the industry could be solved by having the leaders get together.

Mr. Whiting has been a leader in paper manufacturing circles in the State of Wisconsin. He helped organize the second newsprint mill on the Fox River and probably the second in the State. He joined a Mr. Gilbert in the erection of what is now known as the George A. Whiting Paper Mills. Later the Centralia Pulp and Paper Co. was built by interests of which he was a part, and this was followed soon after by the establishment of the Wisconsin River Paper and Pulp Company. In 1893, construction of the Plover Paper Company's mill was begun on the Wisconsin River near Stevens Point, which later became the Whiting Plover Paper Company, of which Mr. Whiting is the president.

Mr. Whiting tells interestingly of his fight as president of the Wisconsin Valley Improvement Company, to stabilize the flow of water in the Wisconsin River. Joining with Thomas Nash, a manufacturer of Wisconsin Rapids, seventeen old lumber dams on the upper river were bought up and turned over to the State at a moderate figure. By keeping these dams closed, a storage of 4,500,000,000 cubic feet of water is effected twice a year and a fairly even flow maintained except when there are freshets during the summer dry spells. Mr. Whiting declares this was one of the best tasks of his lifetime.

One of his greatest misfortunes was the destruction of his Menasha mill by fire in 1886. At the same time, one of the rotary digesters blew up, killing 17 persons and wounding 70. It looked like his finish, but he used all his resources to pay up his obligations and started rebuilding at once.

Long Life
Fast Production
Low Cost per Ton



NORTON COMPANY, WORCESTER, MASS., U. S. A.
Norton Company of Canada, Limited, Hamilton, Ontario

NORTON
PULP STONES

The better BIRD SCREEN

Others tried it, and failed.

Paper makers said they didn't believe it was possible.

But we've done it! We've improved the Bird Screen.

The story of the Better Bird Screen will prove interesting and valuable to you. Ask us to send you a Bulletin containing a fully illustrated description.

BIRD MACHINE COMPANY
South Walpole
Massachusetts

Improvements include:

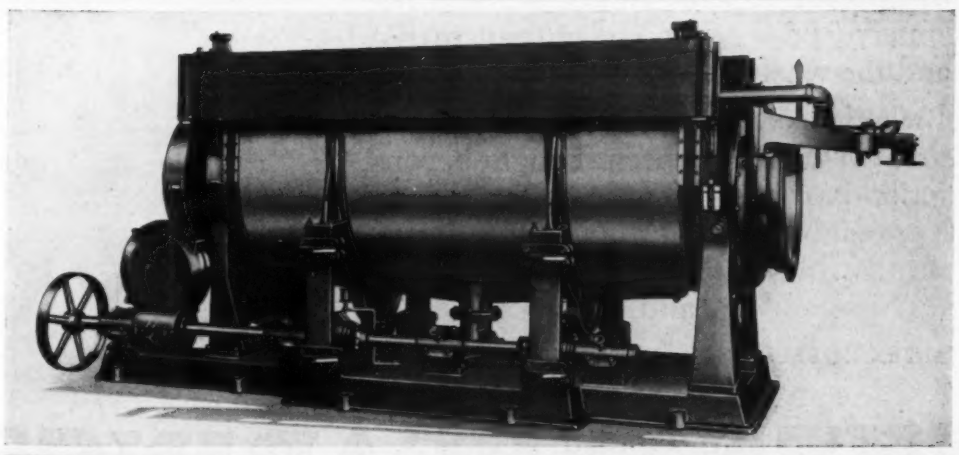
A worm drive for compactness and safety

A new type of shake for simplicity and better screening action.

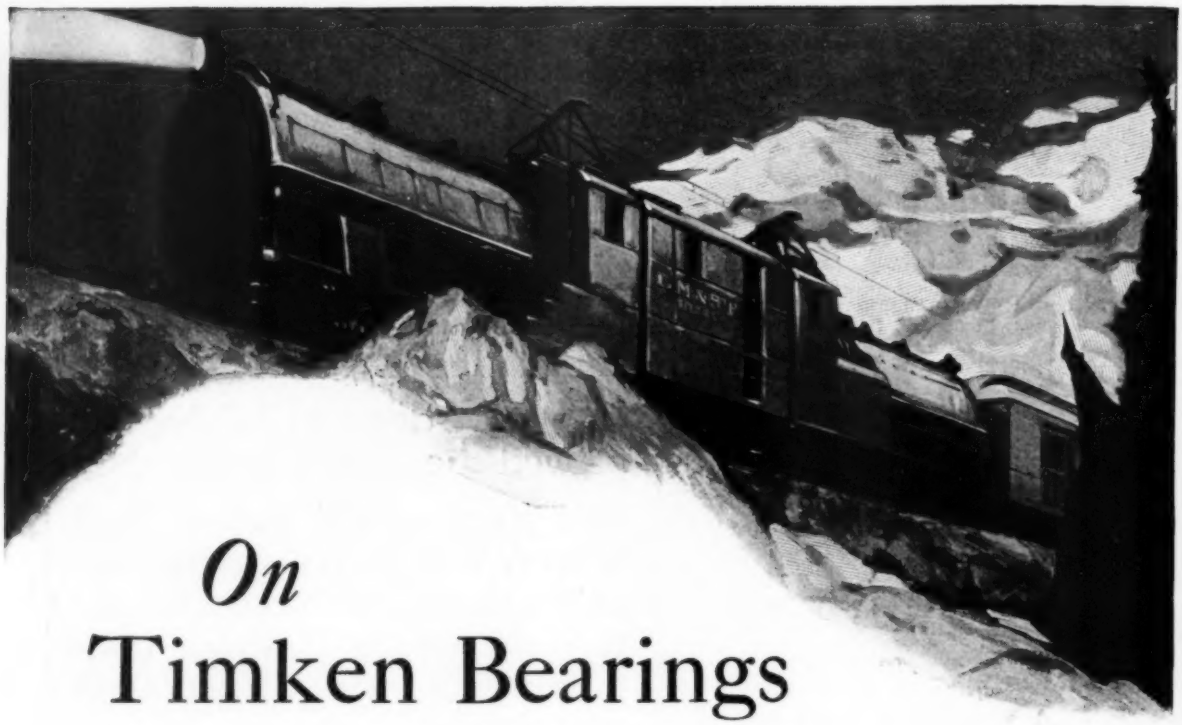
Greater accessibility and ease of maintenance.

An all copper vat for permanence.

BIRD MACHINERY



Twenty odd thousand tons of paper pass through Bird Screens daily



On Timken Bearings

In the epic history of the railroads a new chapter opens. Cars regularly equipped with anti-friction bearings are here. Timken Bearings make it possible. The first standard Timken-equipped cars go into operation on the Chicago, Milwaukee and St. Paul.

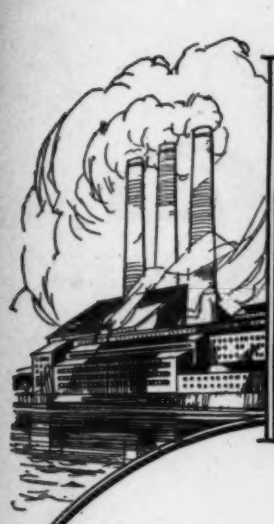
Timken Tapered Roller Bearings for this progressive railroad's crack flyers, THE OLYMPIAN and THE PIONEER LIMITED, mark the day of new ease, quiet and surety in long distance travel.

On guard against the wear and waste of friction, Timken Tapered Roller Bearings not only conserve power, but put an end to hot boxes and the whole lubrication difficulty.

Steel wheels speeding steel grades and curves cause stresses which have been thought beyond anti-friction bearings. Here again, as in every other type of mechanism, throughout Industry, the "impossible" has yielded to Timken design, construction, and resources.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**



Lubrication and Price

It may seem a long step from the lubrication of the machinery in your plant to the price the consumer pays for your product. Nevertheless, lubrication has a very distinct influence on price.

Machinery which is not properly lubricated is sure to wear out prematurely. Repairs and replacements are required and the cost of these repairs and replacements must be added to the price of your product and passed along to the consumer.

Moreover, an incorrectly lubricated machine uses more power in operation than does a machine which is correctly lubricated. This means a larger fuel bill—another item which must be paid by the consumer.

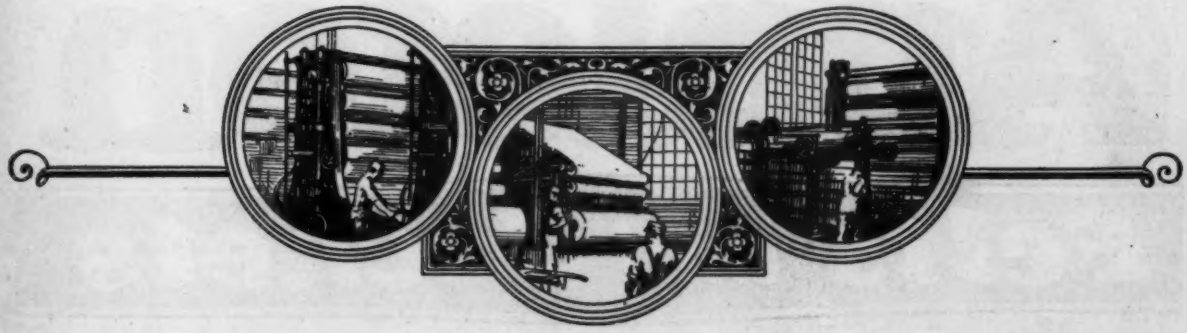
In these days of sharp competition, the bulk of the business goes to the factory or plant which cuts its cost of production to the last possible cent, and gives the consumer the most for his money.

Standard Oils and Greases

can help you to cut your production costs. They reduce friction to the minimum, lower repair and depreciation costs and do away with the premature wearing out of machinery.

Standard Oils and Greases are made in grades to suit the lubrication requirements of all machinery now in use in the industrial world. Our agent will be glad to examine the machinery in your plant and recommend the correct grades.

STANDARD OIL COMPANY
(INDIANA)
910 South Michigan Avenue Chicago, Illinois



Value You Can't Surpass

Made of pure virgin wool—carefully inspected as to size and workmanship—Appleton Felts save you money. Quality considered, their prices are lowest. Large volume coupled with our manufacturing resources, make this possible.

Appleton Felts and Jackets have been giving service to, and making satisfied users of the leading paper mills of the country for 36 years—since we first began manufacturing them.

What better tribute than this could be accorded the design and construction, the finish and durability, of any product? Write and let us figure with you on your requirements.

APPLETON WOOLEN MILLS
Appleton, Wisconsin

Appleton
Felts and Jackets

A new era in paper machine efficiency

C-H-Harland Sectional Inter-Lock Drive

AND now,—a paper machine drive which keeps each section in such exact synchronism with the others, that "breaks" and their consequent production losses are reduced to a fraction of the number you have heretofore considered a "lucky" minimum.

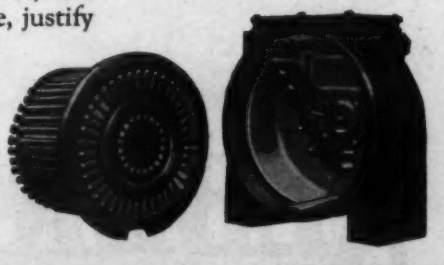
Regardless of load variations or intentional speed changes from the master controller, this drive *automatically* keeps each section turning at its proper ratio within close limits—limits never before attainable.

The Cutler-Hammer-Harland Sectional Inter-Lock Drive enables you to produce a more uniform quality and strength paper at *higher running speeds.*

The results obtained, together with the ease of control, and low maintenance and power consumption of this drive, justify investigation by every paper mill engineer and production executive.

The Differential Regulator

An integral part of the C-H-Harland Sectional Inter-Lock Drive. Keeps each unit of the paper machine working at constant ratio despite load variations or intentional variation in speed from the master controller.



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Pioneer Manufacturers of Electric Control Apparatus

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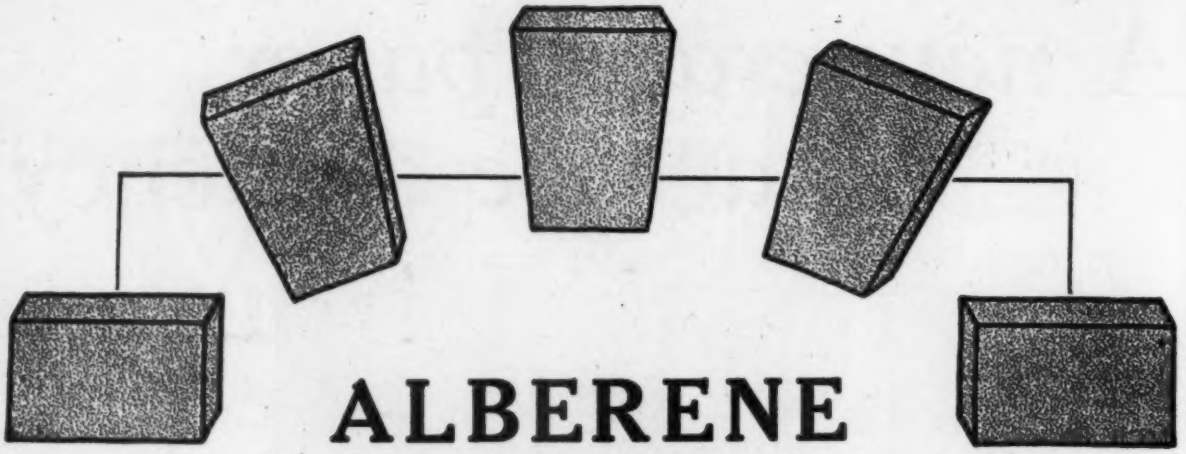
CUTLER C-H HAMMER

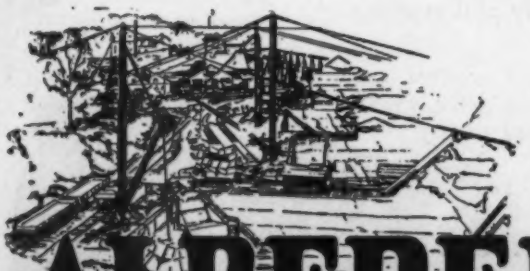
Industrial Efficiency Depends on Electrical Control



ALBERENE STONE FURNACE LININGS

Because of their longer life under combined heat and corrosive action, and the resultant assurance of continuous full-capacity operation, Alberene Stone Furnace Linings are the least expensive material you can use. Prompt deliveries in shapes and sizes as determined by your own drawings.

Alberene Stone Laboratory Equipment is standard in all modern research and industrial plants. Write for the Bulletin.



ALBERENE STONE COMPANY
153 WEST 23rd STREET, NEW YORK
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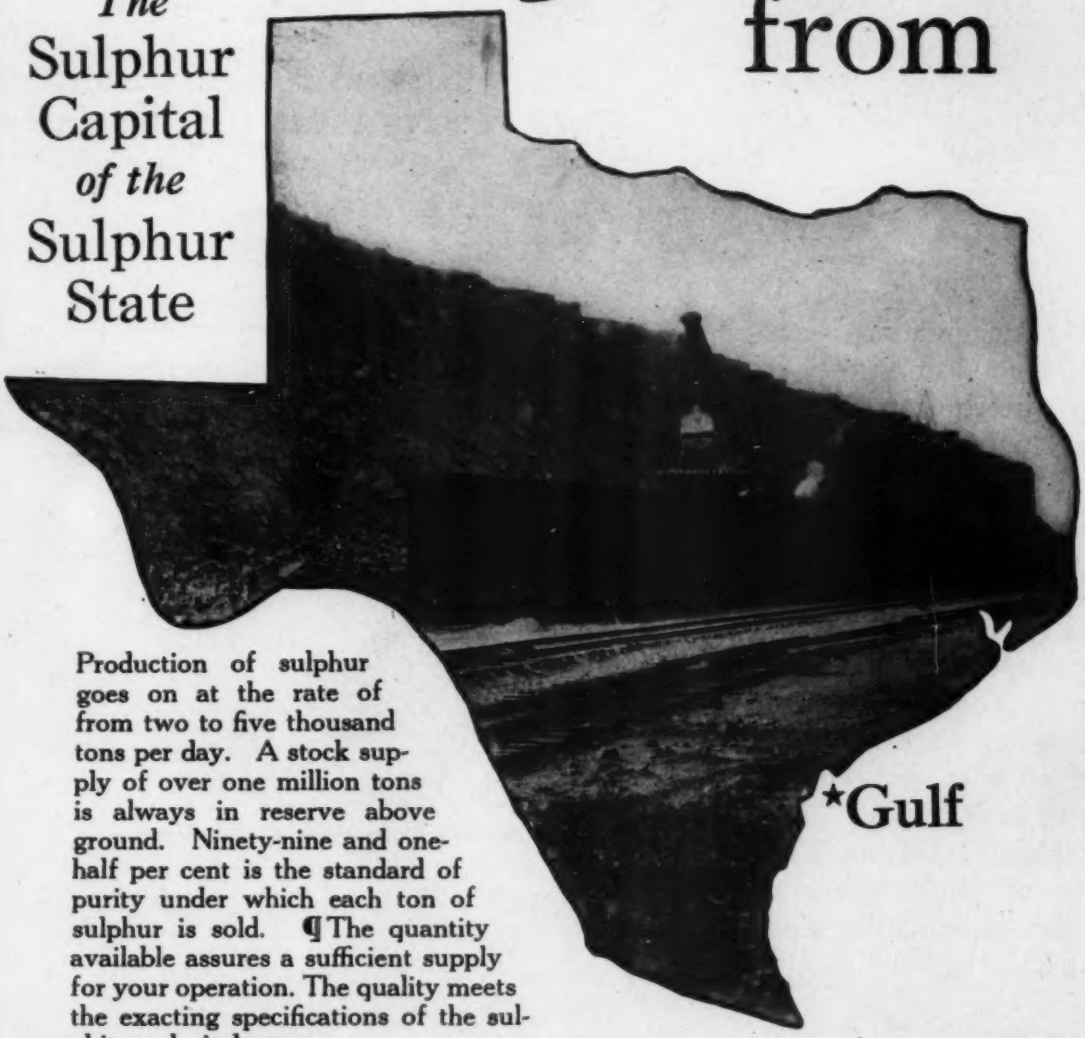
ALBERENE STONE

QUARRIED FOR OVER 40 YEARS — FOR LIFETIME SERVICE — NO ARTIFICIAL SUBSTITUTES

ACID - ALKALI - AND - FLAME - RESISTANT ¢ NON - ABSORBENT NON - CONDUCTING

Sulphur from

The Sulphur Capital *of the* Sulphur State



Production of sulphur goes on at the rate of from two to five thousand tons per day. A stock supply of over one million tons is always in reserve above ground. Ninety-nine and one-half per cent is the standard of purity under which each ton of sulphur is sold. ¶ The quantity available assures a sufficient supply for your operation. The quality meets the exacting specifications of the sulphite pulp industry.

TEXAS GULF SULPHUR CO.

41 E. 42nd Street New York City
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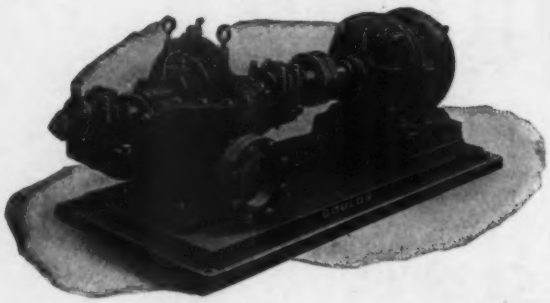
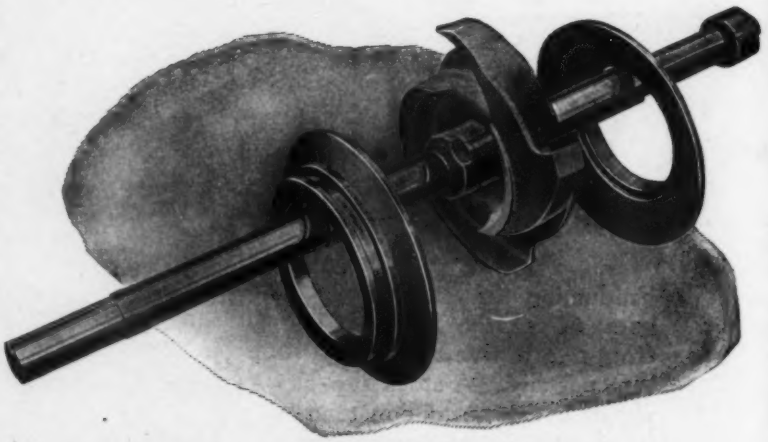


THERE is a Goulds Pump for every paper mill service; for circulating, boiler feed, fresh water service, pulp and white water.

For pulp and white water, we recommend the single stage pump with special open type impeller as illustrated.

THE dependability and efficiency of a stock or white water pump depends largely upon the ability of impeller to keep from clogging. The construction of Goulds open impellers is such that they will pass solids twice the size of the ordinary centrifugal stuff pump. Stocks up to 5% consistency are being handled with a high degree of satisfaction. This non-clogging feature is the secret of the success of Goulds dependable stock pumps.



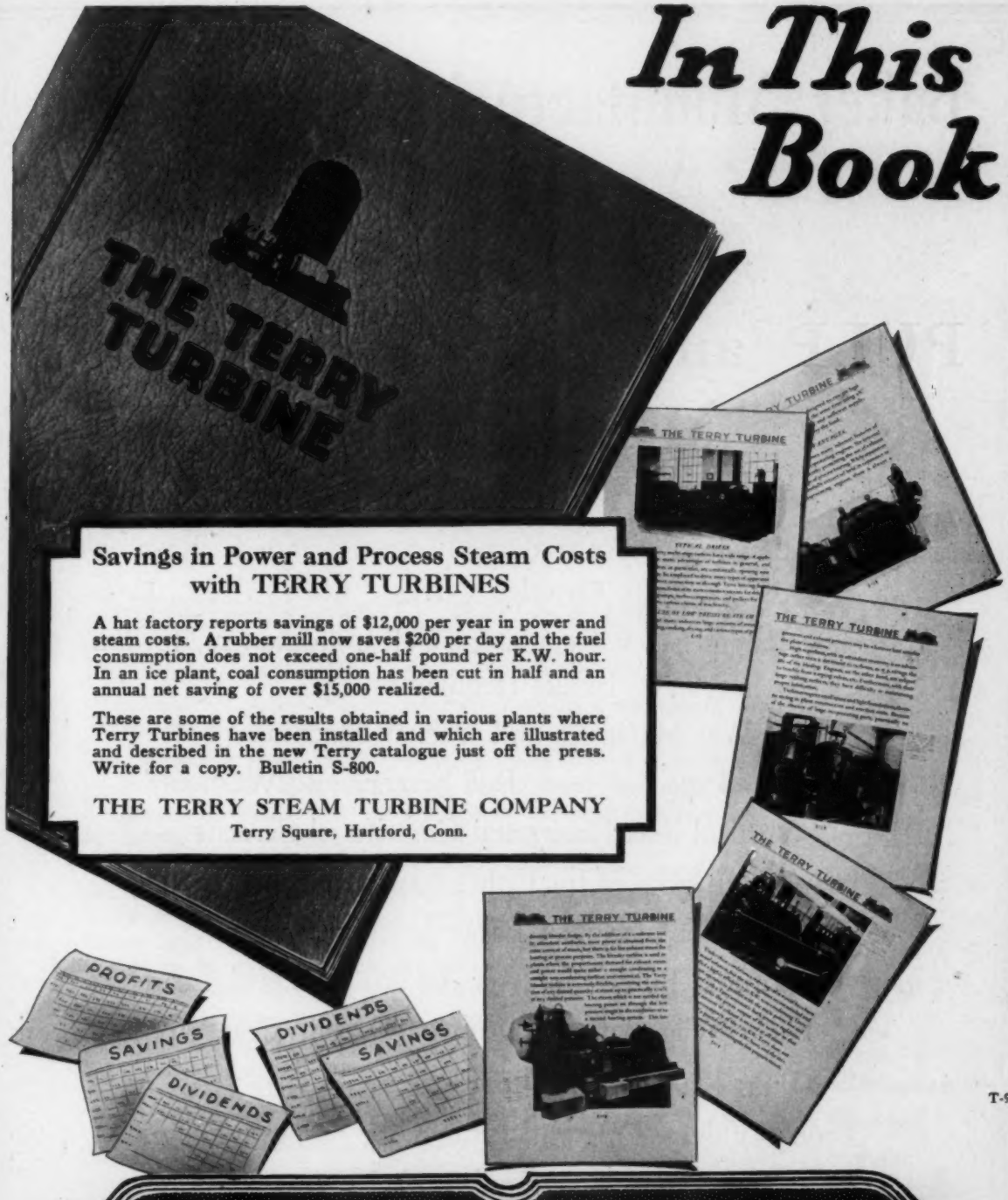
For Pumping Stocks Up to 5% Consistency

Write for Bulletin 128, which describes these pumps in detail. You should also have a copy of the Lefax data booklet on The Paper Industry. Copies free on request.

Goulds Pumps, Incorporated
Seneca Falls New York

GOULDS PUMPS

In This Book



Savings in Power and Process Steam Costs with TERRY TURBINES

A hat factory reports savings of $12,000 per year in power and steam costs. A rubber mill now saves $200 per day and the fuel consumption does not exceed one-half pound per K.W. hour. In an ice plant, coal consumption has been cut in half and an annual net saving of over $15,000 realized.

These are some of the results obtained in various plants where Terry Turbines have been installed and which are illustrated and described in the new Terry catalogue just off the press. Write for a copy. Bulletin S-800.

THE TERRY STEAM TURBINE COMPANY
Terry Square, Hartford, Conn.

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THE TERRY TURBINE

Baker Manufacturing Corporation

Manufacturers of

A General Line

PULP and PAPER MAKING MACHINERY

Automatic Magazine Grinders, Pocket Grinders, Ramsey Grinder Valves

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Diaphragm Screens for Either Flat or Inclined Setting

Horizontal Rotary Paper Machine Screens

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C. Bache-Wiig Barking Drums for Four Feet Wood

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Bronze Valves, Pipe and Fittings for Sulphite Process

Steel and Semi-Steel Valves for Soda and Sulphate Process

Winders, Winder Shafts, Reels, etc., etc.

Baker Manufacturing Corporation

Saratoga Springs, N. Y.

Install 'Em and Forget 'Em

That's what we guarantee for James Speed Reducers.

Once properly installed, they operate year in and year out without care or attention, except occasional lubrication.

The illustration above shows two James Planetary Spur Gear Speed Reducers on stuff chest drives at the Bryant Paper Company's plant, Kalamazoo, Michigan. Heat and moisture do not affect their operation. Maintenance is unnecessary—they are installed and forgotten.

For every reduction drive there is a standard James Reducer, not a makeshift unit altered to fit, but a unit designed for the purpose. Planetary Spur Gear Reducers to drive up, down, horizontally or at an angle for decker, stuff chest, stock chest, log haul, and other average drives; Continuous-Tooth Herringbone type reducers for extremely heavy duty drives; and Worm Gear type reducers for light, intermittent service.

No matter what the service, we make a standard unit to fit—send us the inquiry, prompt, intelligent attention assured.

Send for Catalog No. 99

WE MANUFACTURE

Planetary Spur Gear, Worm Gear and Herringbone Gear Speed Reducing Transmissions, to drive up, down, horizontally or at an angle, Cut Spur, Bevel, Mitre, Worm, Internal, Helical and Tractor Gears of all materials, Racks and Flexible Couplings

D. O. James Manufacturing Company
1114 West Monroe Street, Chicago

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Back to Byers!

Where wrought iron displaced steel

IN a large metropolitan power station, pipe failures within a short span of years became very annoying. Investigation revealed the fact that it was ordinary "wrought" pipe. When this company built a new station, their engineers saw to it that genuine wrought iron was installed for many purposes where ordinary pipe was once supposed to be satisfactory.

This experience is duplicated in industrial and power plants in almost every part of the country. Specific instances are constantly called to our attention. Hence a distinct trend towards wrought iron is observed in all places where corrosion is a factor, and where pipe materials are chosen with due regard to the heavy cost of pipe failures.

Distributors in All Jobbing Centers

A. M. BYERS COMPANY

Established 1864 Pittsburgh, Pa.

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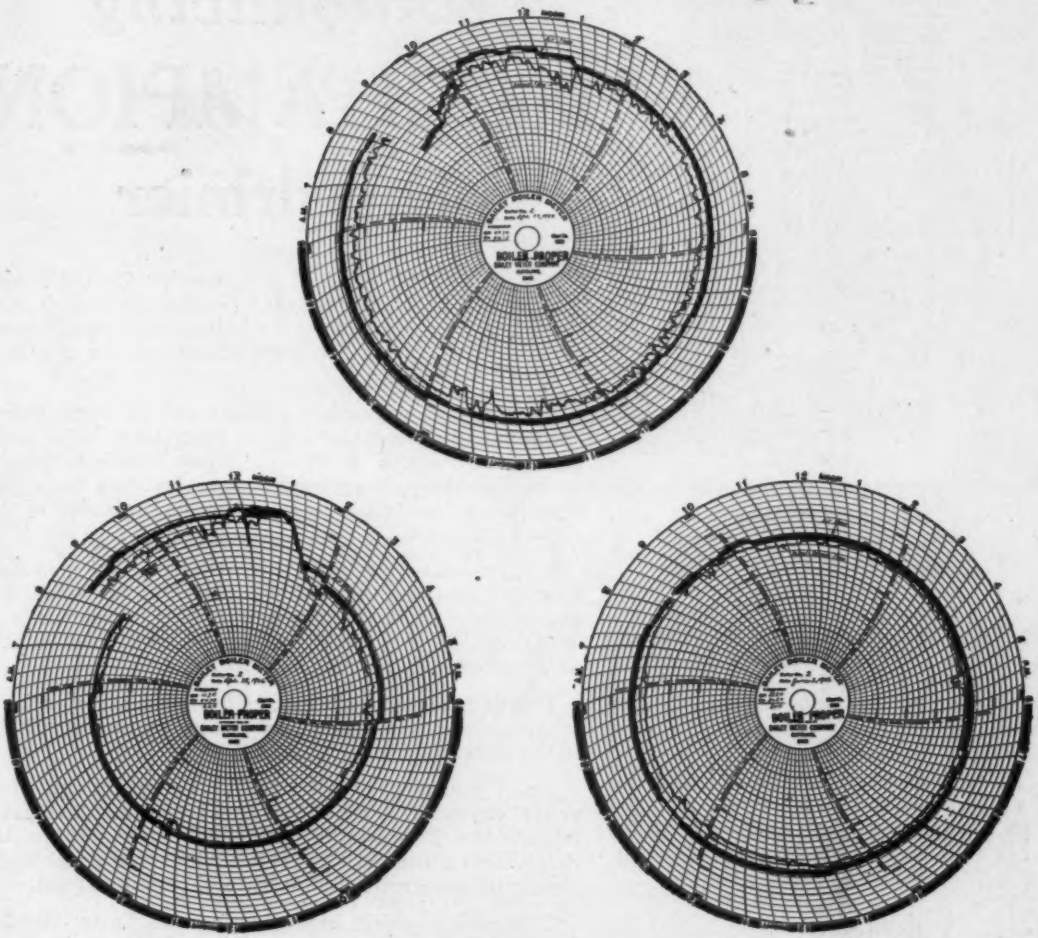
500,000 LBS. of STEAM
from One Unit



Operation of the Combustion Steam Generating Unit at the Fordson plant of the Ford Motor Company has been maintained at 500% of rating for weeks. Peak ratings of 630 to 650% have been maintained for from one to two hours when desired.

The operation of this Combustion Steam Generating unit sets a new standard for steam generation.

We are prepared to build units of this type—each capable of producing sufficient steam for a 60,000 K. W. turbo generator.

Combustion Engineering Corporation

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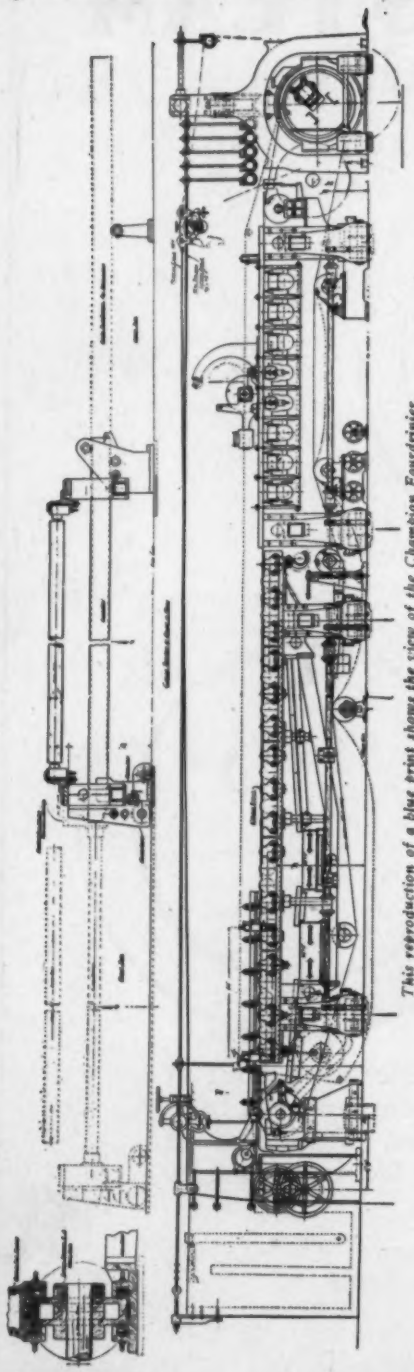
A SUBSIDIARY OF INTERNATIONAL COMBUSTION ENGINEERING CORPORATION



This reproduction of a blue print shows the view of the Champion Fourdrinier. Also shows the position of the wire during the process of changing.

Announcing the CHAMPION Fourdrinier

ON JANUARY 22nd, The Champion Coated Paper Company, Hamilton, Ohio, pulled the switch that started in operation its new 172-inch high speed book machine, and that at the same time opened ***a new era in paper making.***

The Champion Fourdrinier, the result of over a year's research and development, is not simply a mincing step, but a giant's stride in advance of any Fourdrinier built up to this time—the biggest move forward since the invention of the first Fourdrinier at the beginning of the 19th century.

It may seem like other Fourdriniers, but it is not. There's something unusual about it. The table roll section is perfectly stationary, non-shaking, while the wire is shaking, moving forth and back without noise, shock, or vibration.

This is because the breast roll is built as an entirely separate unit, and shakes, imparting in turn its shake to the wire.

And the advantage is just this. Ten years ago when paper was made at speeds seldom more than 200 feet a minute the Fourdrinier part shook from 150 to 175 revolutions a minute. Yet, it is obvious that shake speed should increase with the increase of running speed.

This new machine, incorporating the Kutter-Randall Fourdrinier part, makes it possible to increase the shake speed to 400 or more revolutions a minute—an increase of more than 100 per cent.

You want to see more of this machine—a Champion in performance as well as name. Write for more complete details.

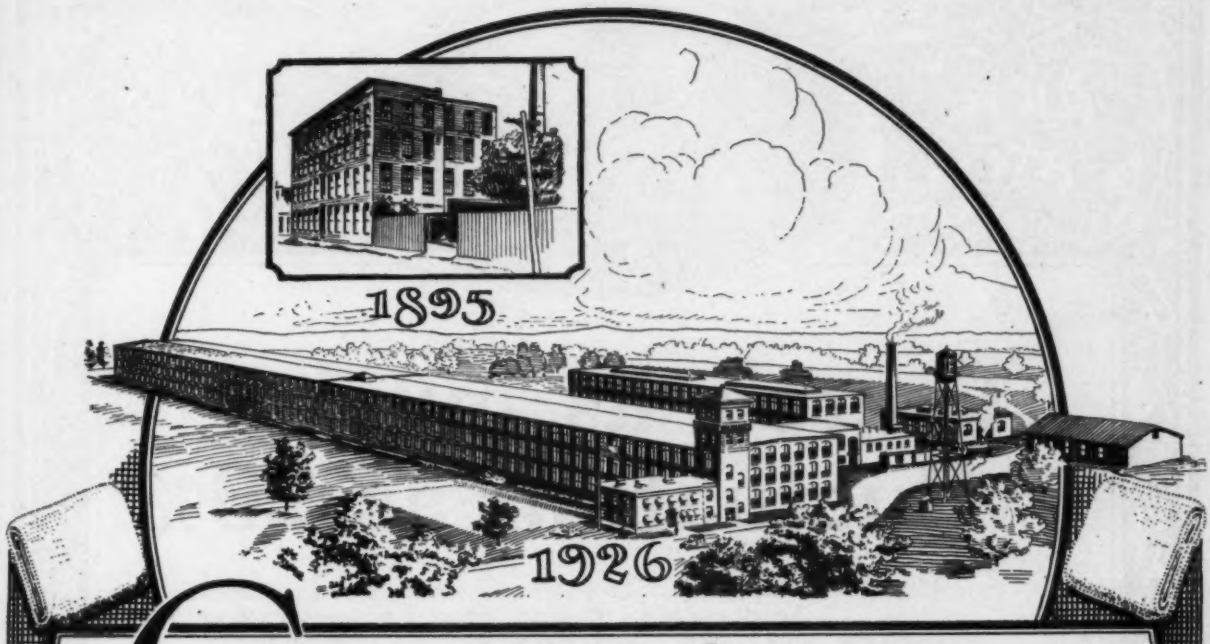
THE BLACK CLAWSON COMPANY
HAMILTON, OHIO
ESTABLISHED 1873

Export Offices: 15 Park Row, New York City

BLACK-CLAWSON

CHAMPION FOURDRINIER

Built with Machine-Tool Accuracy



Growing with a mighty industry

On this 50th Anniversary of the American Paper and Pulp Association we experience a feeling of pride and satisfaction in knowing that our products have had their place in the progress and development of this great industry. Although the youngest, ours is the fastest growing felt mill in the country.

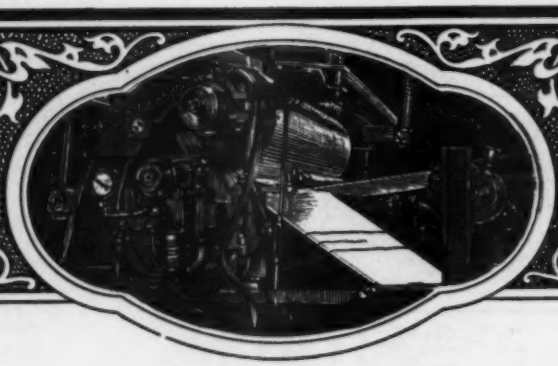
In recent years vast forward strides have been made in the production of paper and pulp. Step by step our Textile Engineering and Research Departments anticipated the requirements of the industry. They have designed felts and jackets which stand up under the strain of higher speed production and still retain maximum porosity.

Albany Felts and Jackets are in use on many of the largest and fastest machines—increasing production, reducing delays and making larger profits for manufacturers of paper and pulp.

In the future, as in the past, we will always be ready and glad to serve the paper industry whose welfare is so closely linked with our own.

ALBANY FELT COMPANY

ALBANY, N. Y., U. S. A.



There's as much fluctuation as 20%

It has been found by close observation that the performance of the felt can affect the consumption of steam as much as 20%. And it takes a huge coal pile to produce 20% of the steam in the average paper mill.

Consequently, if felts can make such a difference, it's only good business to have the best felt you can get, not alone in quality of materials, but in the way it fits your individual machine needs.

Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

You want to call in a Hamilton Felt Man. In the first place, he's a practical felt man. He knows felts, what they should do on a particular machine and how to specify them so that they do it.

In the second place, he represents a felt manufacturer who has more than three generations of experience behind him—experience that decides the mixture of the wool, the strength and thickness of the threads, and the design of the warp and woof. It only takes a single Hamilton Felt to demonstrate to you that there are felts and felts.

Ask the Hamilton Felt Man the next time he calls. He'll give you a felt that fits your individual needs

SHULER & BENNINGHOFEN, Hamilton, Ohio

The Miami Woolen Mills—Founded 1858

Hamilton Felts

C-H MAGNETIC CLUTCHES

Instant Control for threading and adjusting— Smooth acceleration at starting

EVER watch a paper machine equipped with a Cutler-Hammer Magnetic Clutch on each unit?

See how easily it is inched along for threading or adjustment. Jogging the push button controlling the clutch, gives movements of one inch or less. In repairing a screen for example, there is no watching the broken spot slide by—and no need for another try hoping to bring it where you can get at it next time. The C-H Control brings any moving part right to you the *first* time. It cuts your idle machine time for repair and adjustment to a fraction of what you now require. It counts big in the day's production.

Then at starting. Note what a simple matter it is to get going. Motors are started with the clutches disengaged. A few swift touches to the conveniently placed control buttons and one after another each unit is accelerated. No grabbing or jerk and shock to equipment. Just smooth, easy acceleration that doesn't destroy delicate synchronism of units nor transmit strains that mean expensive repairs later.

This book tells how!

Shows many interesting installations. Gives sizes, dimensions, capacities. Your reference file is not complete without it. Sent free on request.

C-H Magnetic Clutches have an enviable record of speeding production and lengthening machine life. The results obtained are worth your investigation.

The CUTLER-HAMMER Mfg. Co.
Pioneer Manufacturers of Electric Control Apparatus
1254 St. Paul Avenue, Milwaukee, Wis.

C-H Magnetic Clutches are on all unit drives of the Frank Smith Paper Co., Middletown, Ohio.

CUTLER C-H HAMMER

Industrial Efficiency Depends on Electrical Control

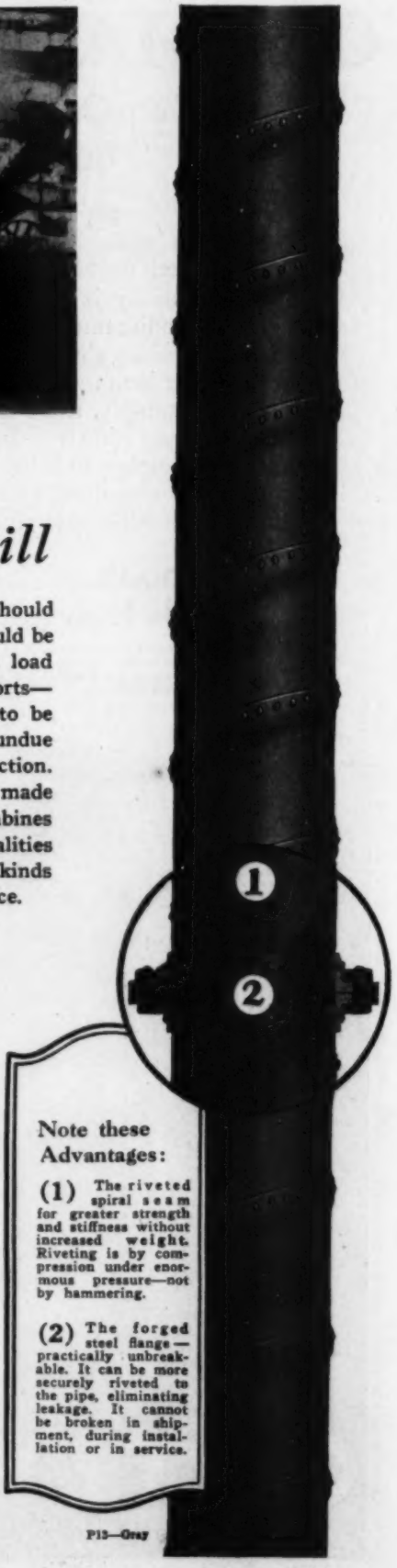
For water supply lines

TAYLOR Spiral Riveted Pipe combines moderate first cost with great strength and light weight. It can be handled and installed with ease, even when the line traverses rough country. When fitted with Taylor Bolted Joints, as shown above, the pipe may be deflected slightly for long bends or to conform to surface irregularities without pipe bends or fittings.

For the paper mill

PIPE in a paper mill should resist corrosion—it should be strong enough to carry its load in long runs between supports—it should be light enough to be erected overhead without undue cost in labor and construction. Taylor Spiral Riveted Pipe, made of copper-bearing steel, combines so well these essential qualities that it is preferred to other kinds of pipe for paper mill service.

Taylor Spiral Riveted Pipe is made of copper-bearing steel in sizes from 3 to 42 inches in diameter and in lengths to suit requirements. Each length is fitted with Taylor unbreakable Forged Steel Flanges or Bolted Joints and covered with a special asphalt or galvanized coat.


1
2
Note these Advantages:
(1) The riveted spiral seam for greater strength and stiffness without increased weight. Riveting is by compression under enormous pressure—not by hammering.
(2) The forged steel flange—practically unbreakable. It can be more securely riveted to the pipe, eliminating leakage. It cannot be broken in shipment, during installation or in service.
P13—Gray

American Spiral Pipe Works
Main Office and Works: Box 485, Chicago, Ill.
New York Office: 50 Church St.

TAYLOR *Spiral Riveted* PIPE

CONTROLLED PRECISION

The business end of a Precision Jordan—the engine that makes uniform runs possible.

Instead of a hit or miss method of running stock through the Jordan, it is possible now, with the micrometer adjustment of the Precision Jordan, to know definitely the refinement of the stock produced at different settings of the plug.

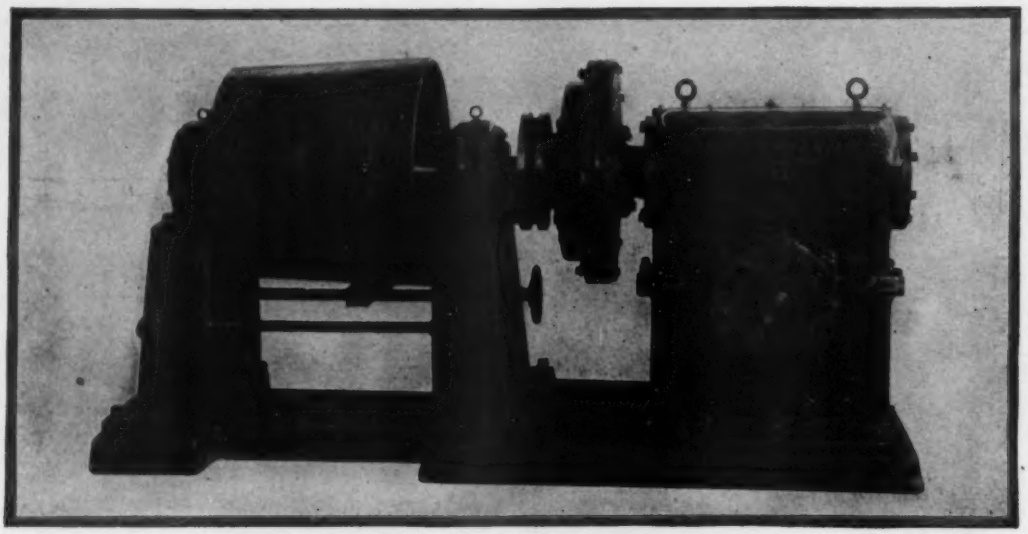
Dials near the hand wheels are graduated into ten divisions, each representing a plug thrust of one thousandth of an inch. One complete revolution of hand wheel gives plug a thrust of one hundredth of an inch. With micrometer adjustment, tabulations can be made giving accurate data for future operations.

Every Noble & Wood product is made with an eye to better, more accurate paper production. Noble & Wood engineers are constantly working on advanced paper manufacturing methods.

More detailed information regarding the Precision Jordan and other Noble & Wood Paper Making Machinery gladly furnished on request.

The NOBLE & WOOD MACHINE CO.

Hoosick Falls, N. Y.



Cleveland Worm Gear Section Drive installed on an old machine at the Paul A. Sorg Paper Company, Middletown, Ohio.

Compare This Section Drive With Open Gears

Cleveland CWGC WORM GEAR REDUCTION UNITS

Standard Cleveland units are manufactured in capacities ranging from ½ to 150 horsepower and in a great variety of speed reduction ratios. They have proved successful for all sorts and sizes of paper mill machinery.

The paper machine section drive shown in the above picture is being eagerly adopted by paper manufacturers throughout the country. At a comparatively small cost it reduces maintenance charges greatly and eliminates production delays. In addition, it provides an efficient, clean, self-lubricated and easy-running drive.

The heart of the drive in the Cleveland Worm Gear Reduction Unit—the first worm gear drive to meet completely the requirements of paper machine operation. Cleveland worm gears have been tested through years of actual paper machine service and are now installed in the drives of thirty-seven machines with complete satisfaction.

In a Cleveland drive you not only get the best of worm gear equipment but its successful performance is also insured by our years of experience in this field. The drive can be installed on a single section or an entire machine with equal facility.

We can furnish a complete drive with pulley and magnetic clutch, as shown above, or a standard reduction unit alone, to be incorporated in the drive by your machine builder or engineers.

CLEVELAND WORM & GEAR COMPANY

3270 EAST 80th STREET **CLEVELAND, OHIO**

Oily condensate before and after passing through a Permutit Oil Removing Filter. Note that all oil, both in suspension and emulsion is removed.

(From an unretouched photograph.)

How Oil Free Condensate Will Save You Money

FEW engineers realize how much money is actually involved when oily condensate is thrown to waste. It is worth while giving the matter some thought.

For example, a boiler uses about 4 gallons of water per b.h.p. hr. If 75% condensate is available it would amount to 72,000 gallons per day of 24 hrs. for 1,000 b.h.p. With condensate at 200° F. and makeup water at 70° F., this would be equivalent to 77,700,000 B.t.u. which is approximately 9,750 lbs. of fuel or about $20.00 per day ($6,000 annually). To this must be added the cost of softening the water and of blowing off when raw water is used, which amounts to 17-19 cents per 1,000 gallons or $4,000.00 per year for this plant. Thus the total loss per year for 1,000 b.h.p. is in excess of $10,000.00

Since Permutit Oil Removing Filters remove all oil from condensate—whether it is in suspension or emulsion—you are guaranteed a large return on the money invested. Most plants, in fact, pay for themselves several times over every year.

Permutit Oil Removing Filters are small and easily operated. The filtering material does not have to be burned out or renewed, but is washed by a simple manipulation of valves without opening the appa

It will pa

further. W

"Saving

Feed

Permutit

Oil Removing Filte

THE PERMUTIT COMPANY, NE

Branches and stocks in 67 cities

The Chicago Belting News

FINAL EDITION

Written for paper and pulp mill men
by the Chicago Belting Company, 118 N. Green St., Chicago

Volume III | Not Copyrighted | MARCH, 1927 | This paper consists of 1 page | Price—3 Minutes

VIEW OF ST. HELENS BELT DRIVES

The Ideals Back of the Belts

THE Chicago Belting Company religiously tries to make the finest leather belting that can be manufactured out of the finest belting butts of oak, mineral (chrome) and combination (retan) tannages.

This has been our policy—our law of business conduct—and a basic fundamental of our factory for 33 years.

Contrast this with the obvious tendency in the field to make belts *cheaper* and not better.

Chicago Belting belts are better now than they have ever been. When belts can be made better we will make them. (Apologies to Buick.) We never build belting to fit a price. *Our answer to price competition is that our belting at our price is the cheapest of all leather belting considering service.*

The

This is a Broke Beater drive—a 3 ply Sea Lion belt.

A 3 ply Sea Lion belt on the Couch Rolls drive.

This is one of their 10 Beaters, all equipped with Sea Lion belts.

All Chicago Belting Belts

HERE are some pictures of the belt drives of the new St. Helens Paper & Pulp Mill of St. Helens, Ore.

Note they use 3-ply leather belts on their couch rolls drive, their press drive and also on their drive to the calender rolls. These 3 plies will have practically no stretch—for a 3-ply leather belt made by Chicago Belting has very little stretch indeed.

On the beaters — they have 10 beaters—all equipped with Sea Lion waterproof belts—they can expect a long life. Beaters with Chicago Belting pretested leather belts often use the same belt ten years or more. That does not always happen—as there are beaters and beaters—but the belts will last that long on an average.

Having your drives equipped with Sea Lion waterproof belts will save any paper mill a lot of power and a lot of belt trouble. Especially if they will have one of their millwrights trained to be a belt man and make belt repairs on Sunday and keep the belts properly dressed with our own belt dressing.

These leather belts will not only last from two to four times as long as the rubber belts, but also they operate with so much lower tension they save a lot of power—enough to affect your power factor appreciably.

Chicago Belting belts are the standard of quality of all American leather belting. They test higher and last longer. Considering service they are the cheapest as well as the best transmission belts any paper mill can install.

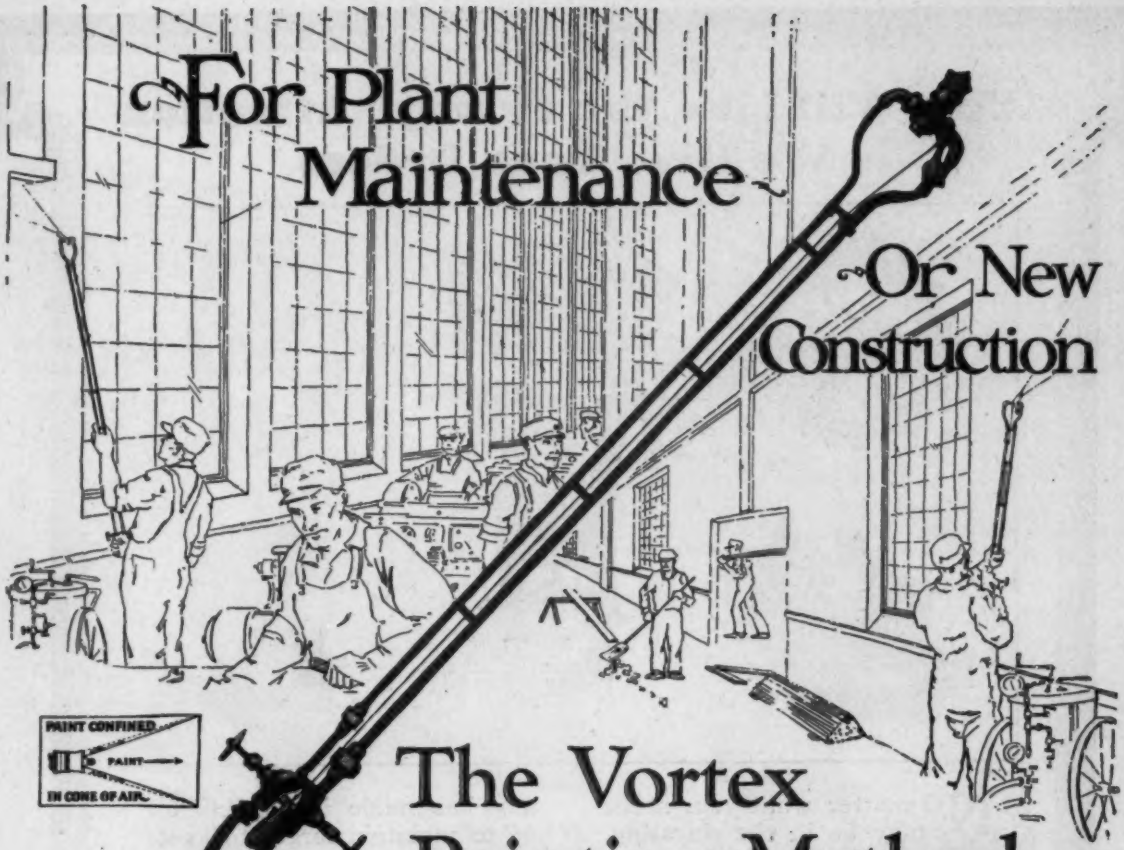
ore-tested
belting

the best is always the cheapest.

The Chicago Belting Company never wants to be the largest manufacturer of leather belting. *But we do value our leadership as to quality and our two generation reputation* for exemplifying in our belting the finest traditions of the leather belting industry.

We have always based our expectations of future business on an honest product, truthfully presented. We always have and we always will.

For Plant Maintenance Or New Construction



The Vortex Painting Method

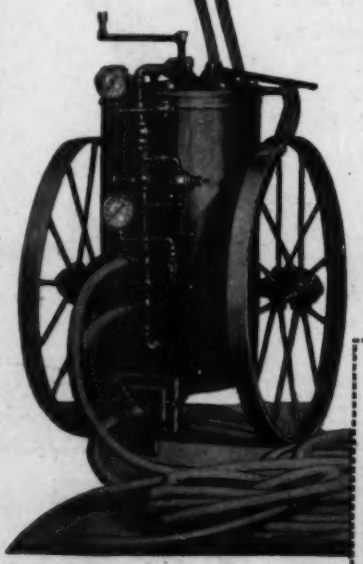
Equipment Furnished Without Cost

for years past has been solving the maintenance painting problem for the biggest industrial concerns—cutting costs in two, with better results.

Now the same organizations are turning to Vortex Painting for their new plants and their plant additions—a good idea for owners of new industrial buildings everywhere.

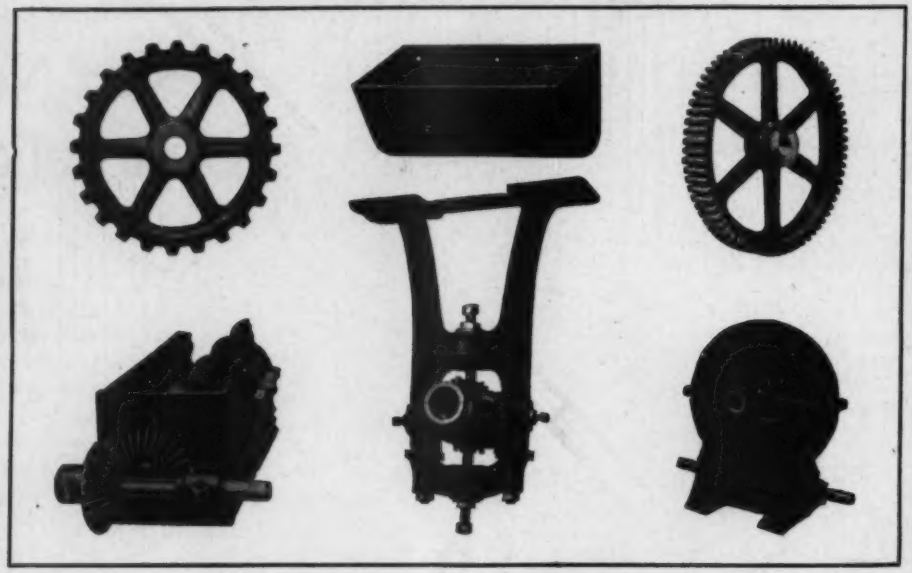
Nothing else can rush a big painting job to such rapid completion—or save so much money—or do a better job. Let the coupon put you in touch with Vortex Paints and the Vortex Method.

THE VORTEX MANUFACTURING CO.
1981 West 77th Street Cleveland, Ohio



THE VORTEX MANUFACTURING CO., Cleveland, O.
Without obligation, please furnish me data as to painting costs on the following:
Old Bldg..... New Const.....
Name of Company.....
Address.....
.....
Individual.....
No. of Yards.....
Inside..... Outside..... Color.....
V-24

You Will Like the Prompt Attention We Give Your Orders



NO matter what your needs may be in the elevating, conveying and power transmitting field, there is a Caldwell product adaptable to your use.

The wide acceptance of Caldwell products by industry generally has made it possible for us to maintain large stocks of wheels, buckets, bearings, and gears, and other elevating and transmission equipment.

Our nearest office will give your inquiry prompt attention.

C-81

Caldwell Products

Power Transmission Machinery—Bearings, Shafting, Pulleys, Machine Molded Gears, Cut Gears, Hangers, Chains and Wheels.

Elevating and Conveying Machinery—Helicoid Conveyor and Accessories. Belt Conveyors, Chain Conveyors, Elevator Buckets, Boots and Casings, Car Spotters, etc.

H. W. CALDWELL & SON CO.

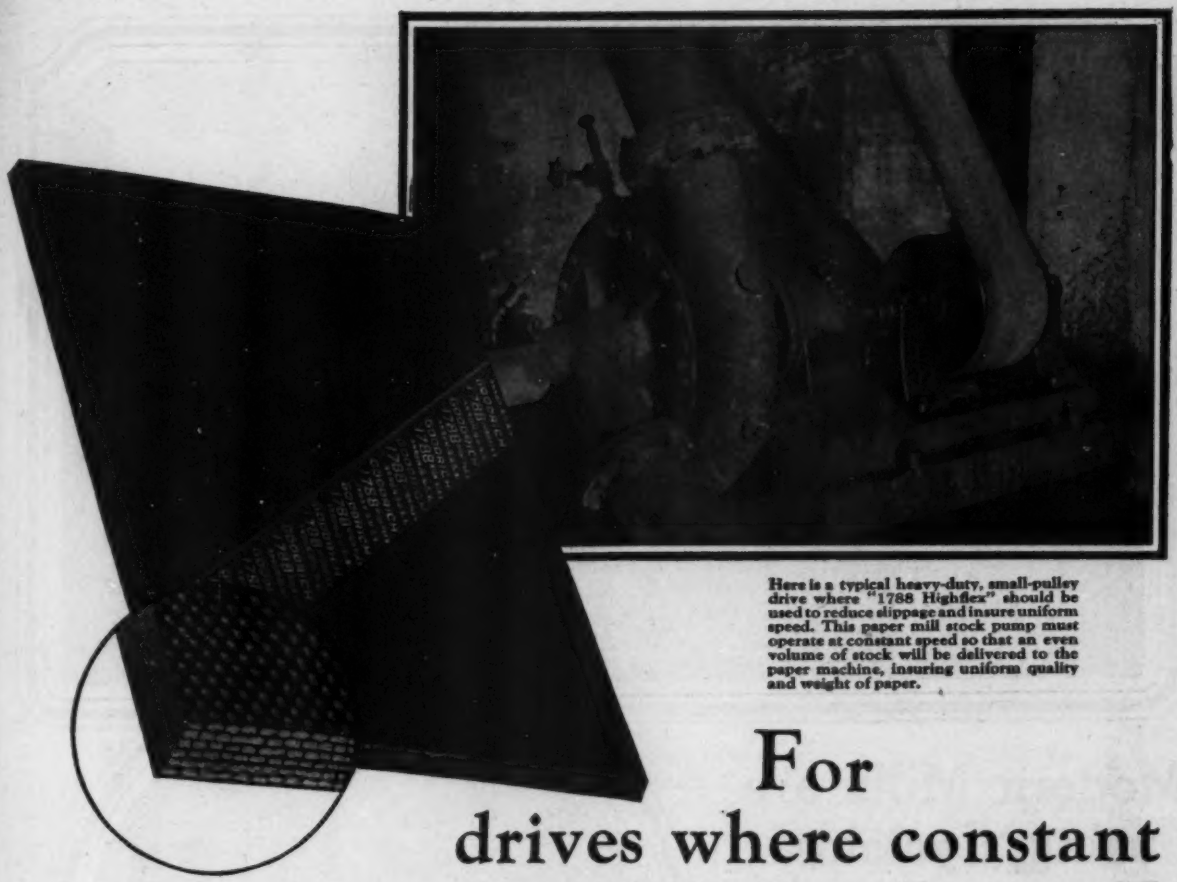
LINK-BELT COMPANY, OWNER

CHICAGO:—Western Avenue at 17th and 18th Streets

Branch Offices

Atlanta.....511 Haas-Howell Bldg.	Denver.....520 Boston Bldg.	Louisville, Ky.....340 Starks Bldg.	Pittsburgh.....335 Fifth Avenue
Birmingham.....730 Brown-Marx Bldg.	Detroit.....2038 Lincoln Ave.	Montreal, Canada.....Bank of Toronto Bldg.	Portland, Ore.....67 Front Street
Boston.....R. 1103, 30 Providence St.	Huntington, W. Va.....Robson-Prichard Bldg.	New Orleans.....504 New Orleans Bank Bldg.	San Francisco.....19th and Harrison Sts.
Buffalo.....554 Ellicott Square	Indianapolis.....309 S. Belmont Ave.	New York.....2676 Woolworth Bldg.	St. Louis.....3638 Olive Street
Cleveland.....537 Rockefeller Bldg.	Kansas City, Mo.....R. 436, 1002 Baltimore Ave.	Oakland, Calif.....536 Third Street	Seattle.....820 First Ave. S.
Dallas.....510 Main Street	Los Angeles.....351-369 S. Anderson St.	Philadelphia.....2045 Hunting Park Ave.	Toronto (1), Canada, Wellington & Peter Sts.
			Wilkes-Barre.....826 Second National Bank Bldg.

CALDWELL



Here is a typical heavy-duty, small-pulley drive where "1788 Highflex" should be used to reduce slippage and insure uniform speed. This paper mill stock pump must operate at constant speed so that an even volume of stock will be delivered to the paper machine, insuring uniform quality and weight of paper.

For drives where constant speed is important—

"1788 Highflex" Belt

Here is a belt built on an entirely new principle—notice the square edge construction, without seam or fold in the fabric.

Although built of heavy, hard-woven canvas, which enables it to handle the heaviest loads, Goodrich "1788 Highflex" bends so easily—because of the "free edge" foldless construction—that better contact and minimum slippage are assured, even on small pulleys.

While a heavy-duty belt in every sense of the word, it is ideal for high-speed drives and small pulleys; particularly wherever constant speed is essential.

For freedom from most belt-troubles—for long life and minimum belt cost per year—specify "1788 Highflex". Give it a thorough test on your worst drives.

Free bending of ply on ply.
No folds in the fabric.
No seams to open up.
No ply separation.
No bootlegging.
Made of heaviest belt duck—50% less stretch.
Compact weave of fabric gives better anchorage—fasteners won't pull out.
Not affected by atmospheric changes.
Longer life.

Send for folder of valuable horse-power and pulley data.

THE B. F. GOODRICH RUBBER COMPANY
Established 1870 Akron, Ohio

Goodrich
"1788 Highflex" Belt

Modern Mills are using Cycloidal Vacuum Pumps

With the first suction rolls and on down to the most modern mills, Connersville Cycloidal Vacuum Pumps have been selected for dependable vacuum service. A characteristic positive suction is combined with economical operation under actual plant conditions. A full list of sizes permits the installation of a pump of the correct capacity for most efficient operation on felt conditioner, flat box, suction roll, dryer or filter type save all.

Send for Bulletin 20B

The Connersville Blower Company
Kentucky Avenue and 16th Street
Connersville, Indiana

Sales Offices
623 Monadnock Block, Chicago
114 Liberty Street, New York
Chamber of Commerce Bldg., Pittsburgh

Connersville

Paper

264 Million Pounds of it Made by Edge Moor-Powered Plants

Edge Moor Boilers supply approximately 80,000 horsepower to thirty paper manufacturing plants, making over 264 million pounds of paper annually.

Such prominent names as the West Virginia Pulp and Paper Co., the Warren Manufacturing Co., and Dill & Collins are numbered among the large users of Edge Moor Boilers. Why? Because in the paper industry, as in more than 50 other American industries, Edge Moor Boilers have established enviable records of operating efficiency, and fuel and maintenance economy. Many Edge Moor Boilers in service for more than 25 years are still operating at high efficiency.

No phase of manufacture has a wider influence on operating costs than the boiler room and the efficiency with which it is run. Savings effected here, through careful selection of equipment, have played no small part in the success of many great commercial houses.

EDGE MOOR IRON COMPANY
Established 1868
EDGE MOOR, DELAWARE
New York Chicago St. Paul Boston
Pittsburgh Charlotte Los Angeles

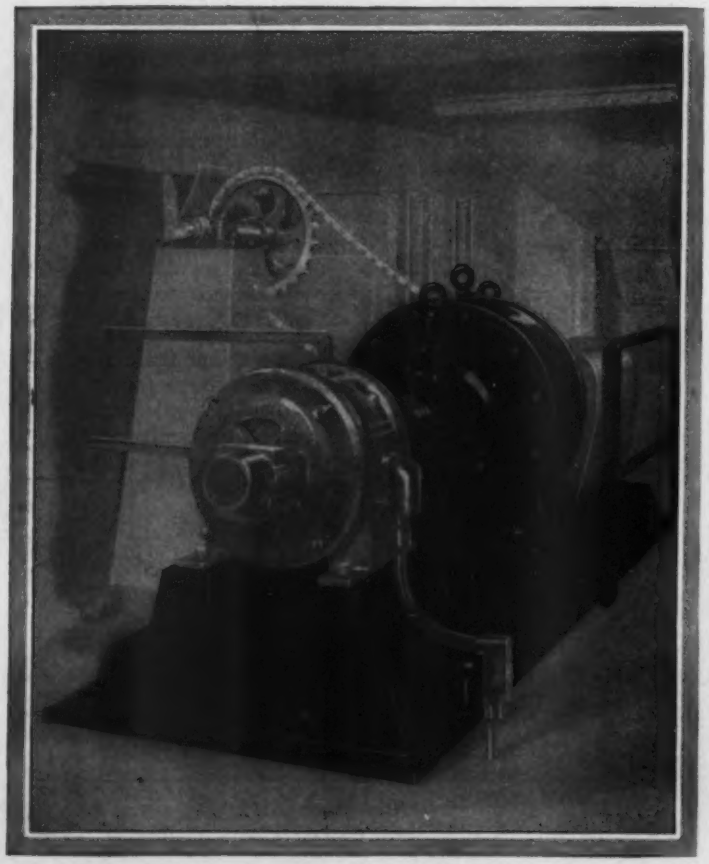
EDGE MOOR Water Tube BOILERS

FOR INCREASED FUEL ECONOMY

Edge Moor Boilers in the West Virginia Pulp and Paper Company's plant at Tyrone, Pa. Seventeen times since 1899 this Company has ordered Edge Moor Boilers. Their present total of 59 boilers, installed in four plants, represents approximately 34,500 B. H. P.

MORE POWER

transmitted in less space



Note how compact and secure this Jones Speed Reducer installation is with the motor and speed reducer mounted on the same base. Correct alignment is assured between motor shaft and high speed reducer shaft.

The necessary reduction in motor speed is obtained in very small space with practically no power loss. Power is transmitted to the driving chain on a balanced straight line. The gears inside the dust-proof reducer housing operate in a constant oil bath under ideal conditions. Friction is eliminated insofar as possible. No attention is required beyond occasionally replenishing the oil supply.

Here, as in numerous other instances, steady economical production is maintained. In mills, mines and factories Jones Speed Reducers are giving this same consistent, trouble-free service. They are driving conveyors, elevators, stokers, agitators, water screens, gas producers, dry-kilns—in short, wherever electric motors are used to drive slower moving machines.

For full information regarding the application of speed reducers to your particular drive problem, write us direct or the office nearest you. We shall be glad of the opportunity to help you. Our Reducer Catalogue Number 26 may prove useful to you. If you do not have a copy, send for it.

Jones Speed Reducers

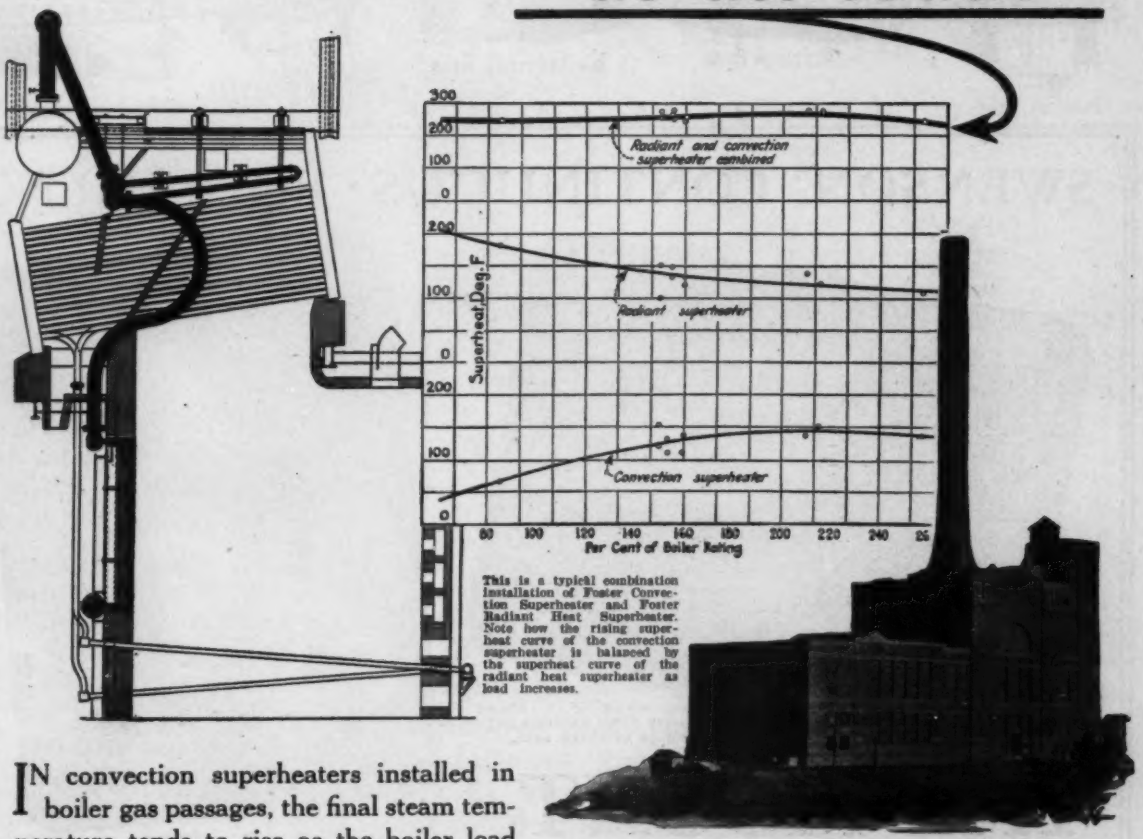
W. A. JONES FOUNDRY & MACHINE COMPANY

Main Office and Works: 4436 West Roosevelt Road, Chicago

Branch Sales and Engineering Offices:
New York Cleveland Milwaukee Pittsburgh Buffalo Detroit
Birmingham St. Louis Cincinnati

Pacific Coast Representatives:
The King-Knight Company, San Francisco, Los Angeles, Seattle

Even, steady superheat *at all loads*



This is a typical combination installation of Foster Convection Superheater and Foster Radiant Heat Superheater. Note how the rising superheat curve of the convection superheater is balanced by the superheat curve of the radiant heat superheater as load increases.

IN convection superheaters installed in boiler gas passages, the final steam temperature tends to rise as the boiler load increases, due to increased weight and temperature of gases.

This tendency can be overcome, and a steady and higher superheat maintained, by passing the steam through Foster Radiant Heat Superheaters after it leaves the convection superheaters.

The Foster Radiant Heat Superheater replaces a portion of the perishable brickwork with efficient superheating surface, thereby also reducing furnace maintenance and improving furnace economy.

Foster Radiant Heat Superheaters can be installed in combination with any convection superheater to produce marked improvement in steam characteristics and boiler efficiency.

POWER SPECIALTY CO.

111 Broadway, New York

Boston, Philadelphia, Pittsburgh, Cleveland, Detroit, Chicago, Milwaukee, Kansas City, Dallas, Denver, San Francisco, Los Angeles, London, England.

FOSTER

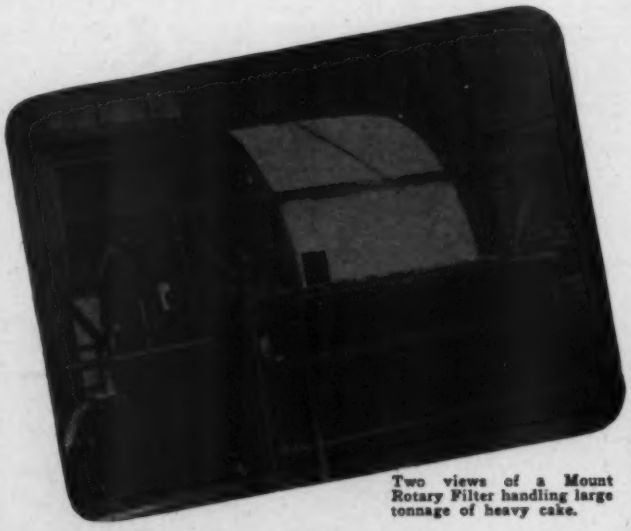
SUPERHEATERS

ECONOMIZERS

WATER-COOLED FURNACES

AERO UNIT COAL PULVERIZER

SWENSON CONTINUOUS EQUIPMENT



Two views of a Mount Rotary Filter handling large tonnage of heavy cake.

THE MOUNT ROTARY VACUUM FILTER

answers the demand of the pulp industry for continuous equipment. The distinct success of this equipment through years of service proves that it is truly continuous, with time of shutdown for repairs practically eliminated. The fundamental design removes the cause of many shutdown periods experienced with some vacuum filters and the ruggedness of construction overcomes all mechanical difficulties.

We will gladly consult with you regarding any special problems. Descriptive bulletins on request.

Mr. W. D. Mount, Consulting Engineer with offices at 602 Peoples National Bank Building, Lynchburg, Virginia, is available for consultation regarding the application of any of the following well-known Mount equipment:

Continuous Causticizing Systems
Lime Recovery Plants
Rotary Vacuum Filters
Pulp Washers

ESTABLISHED 1889

SWENSON

EVAPORATOR COMPANY
(Subsidiary of Whiting Corp.)
Main Office and Works: 15673 Lathrop Avenue, Harvey, Ill.
(Chicago Suburb)
Sales Offices in New York, Chicago, Buffalo, Detroit and San Francisco
Mount processes for alkali manufacture or recovery.
Mount vacuum filters.

ESTABLISHED 1889

PIJ-Gray

Time resisting Liquid Armor *that spreads like* Paint

NITROSE is a liquid armor that corrosion cannot eat. Resists the action of acids on piping and all metal parts—places where chemicals quickly break down other surfacing compounds. NITROSE resists heat on hot piping, boiler fronts, engines, stacks and all hot equipment. Heat cannot blister or flake this liquid armor that welds itself right down into the bare metal through water, rust and oil. A liquid armor that spreads like paint and conquers corrosion.

YOU'LL find it a pleasure to protect with NITROSE—because you won't have to do it again for a long time to come.

Wherever heat, rust, gas, grease, chemicals, acid fumes, brine solutions, ammonia and alkalis attack metal—NITROSE forms an armor that conquers corrosion.

Put it on with no more preparation than wire brushing the scale; spread it over wet, oily and hot surfaces; use only one coat. Do no mixing and use no primer.

Write for more facts you really should know before you RE-paint

Immediate shipment of cans and drums from

SEATTLE .....Alaska Bldg.
A. W. Peters

PEORIA.....Main Office and Factory

NEW YORK.....723 Seventh Ave.
R. E. Hagenah

CLEVELAND.....1367 E. Sixth St.
A. H. Young

DETROIT.....2051 W. LaFayette
Coon-DeVisser Co.

LOS ANGELES....1906 Stanford Ave.
Enterprise Sales Agency

KANSAS CITY.....914 Central St.
Uhrich Supply Co.

ROCHESTER.....220 Mt. Hope
Low Sales & Eng. Co.

SAN FRANCISCO.....543 Clay St.
Day Sales Co.

The NITROSE Company

1500E Peoria Life Bldg., Peoria, Ill.

NITROSE

Appleton

Fourdrinier Wires

Cylinder Wires

Save-All Wires

Washer Wires

In Brass and Phosphor Bronze

"Appleton Wires Are Good Wires"

APPLETON WIRE WORKS, Inc.
Appleton, Wis., U. S. A.

The HARVEY-LEWELLEN

Paper Thickness Control System *for* Paper Mills

¶ This control system will automatically control the thickness of paper to the specified limit.

¶ Systems are installed complete without stopping the paper machine or interrupting production in any way.

¶ Every installation has not only maintained uniform thickness but has resulted in substantially increased production.

Manufactured by

LEWELLEN MANUFACTURING CO.
COLUMBUS, IND.

ENTERPRISE MACHINE CO.
MIDDLETOWN, OHIO

SHOWING CALIPER AND CONTROLLER IN OPERATION ON 110" BOARD MACHINE

ESCANABA PAPER COMPANY

MANUFACTURERS OF

NEWS PRINT PAPER AND GROUND WOOD PULP

DAILY CAPACITY 130 TONS NEWS PRINT 150 TONS GROUND WOOD PULP

M. H. SMITH, President
J. G. SUTHERLAND, Vice-Pres.
T. J. RILEY, Secretary
L. G. BENNETT, Treasurer
J. H. SLATER, Manager

MILLS AT GLADSTONE, MICHIGAN
P. O. ADDRESS ESCANABA, MICHIGAN
TELEPHONE 348-F1

ESCANABA, MICHIGAN
August 25, 1926

Elwell-Parker Electric Co.
410 North Michigan Avenue
Chicago, Illinois

Attention of Mr. G. W. Brown.

Dear Mr. Brown:

I have your letter making inquiry as to our findings in connection with the work of your Type LR truck in comparison with our previous hand operation.

We are enthusiastically satisfied with the performance of this truck. Its workings has created a real sensation in this mill, and everybody who sees it marvels at its speed, flexibility and perfect performance. With the installation of this truck, we had to make some changes in the placing of our scales, but this has been really the only change necessary.

By the operation of this truck we were able to reduce our finishing and loading force by four men at forty-five cents per hour, eight hours per day. So that you may see we will pay for the truck in less than a year. This has reduced the cost of finishing and loading our paper fourteen cents per ton, which, on a production of 35,000 tons per year, which is our present output, will effect a saving of $4,900.00 per year. Our further consideration is that the paper is finished up and loaded in the cars more quickly than ever before. Our men have the paper all loaded and out of the way each day with about two hours to spare.

It is such inventions as this truck and other apparatus of its kind that is making, and is going to continue to make, American industry triumphant over all rivals.

If any of your inquiring possible customers wish to see a demonstration of what this truck can do, our mill is open to them at any time.

Yours very truly,

ESCANABA PAPER COMPANY.

Jos. H. Slater
Manager.

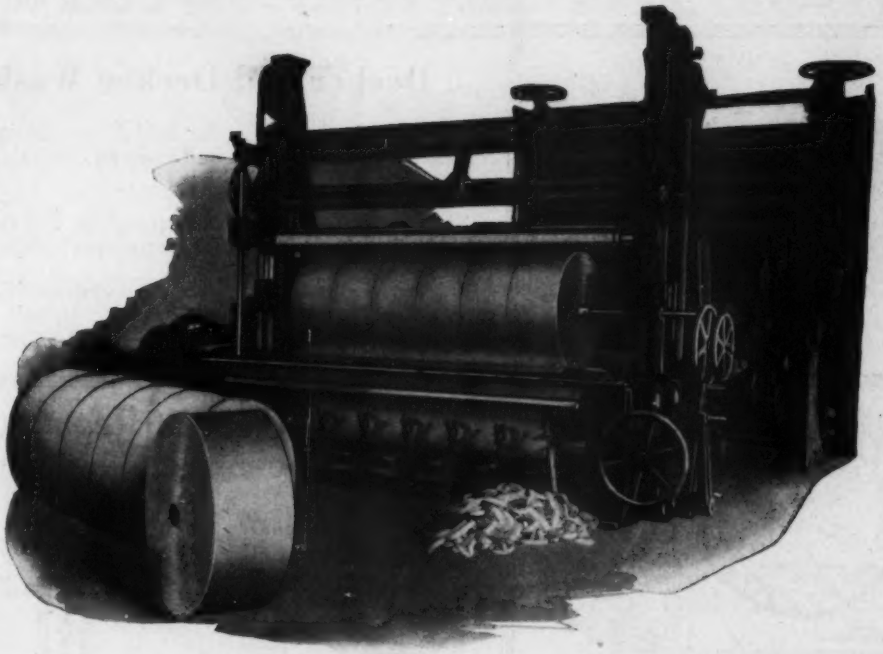
JHS.GS

IT IS EASY

IT is easy to handle rolls with suitable equipment. Having equipped most of the prominent mills, Elwell-Parker has gone a step further by building a machine that will handle news print, roofing, strawboard, bookboard, or practically any kind of rolls from 30 to 50 inches in diameter to 96 inches in length.

THE ELWELL-PARKER ELECTRIC CO.
CLEVELAND, OHIO

Good Rolls



They can be expected of CAMACHINES in their unmatched ability to supply every roll winding requirement. The paper and board mill operators throughout the United States are rapidly coming to the realization that the SCORE CUT METHOD built into every type and model of CAMACHINE is a method which will achieve to the fullest any possible economies in material and labor costs.

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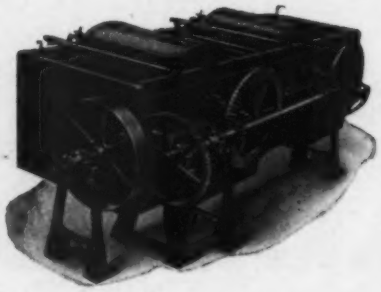


Bleached Sulphite Washer

TWO A. D. WOOD CYLINDER TYPE

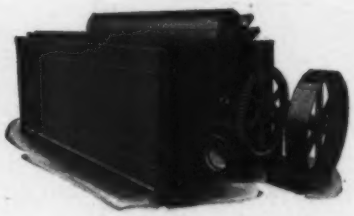
A high efficiency machine handling large capacity with low power and minimum upkeep.

Absence of couch or doctor and continuous self cleaning wire are important features in handling stock containing bleach liquor.

Simply and strongly constructed.

Our new collars ABSOLUTELY ELIMINATE losses by sealing straps. Furnished at nominal cost.

SEND YOUR ORDER AND GET THE BEST

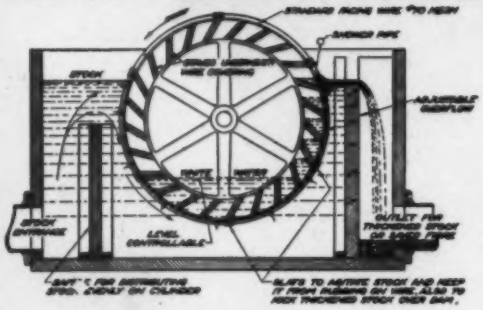


Decker and Decker Washer

We make many styles which are designed for various mill conditions and from an operating standpoint.

Our name on these machines gives you the assurance of many years of satisfactory performance.

The Walker Attachment is applicable to any model or to your present decker. It will increase their capacity 33% at negligible cost.



A. D. Wood Save-all

The A. D. Wood Machine as a Save-all is unique.

New sealing collars and ease of patching the wire mean maximum efficiency.

Simplicity, self-cleaning wire and continuous high capacity give satisfaction and greater savings.

We have reports of 90-95% efficiency for a four year period

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FOR FOURDRINIER MACHINES

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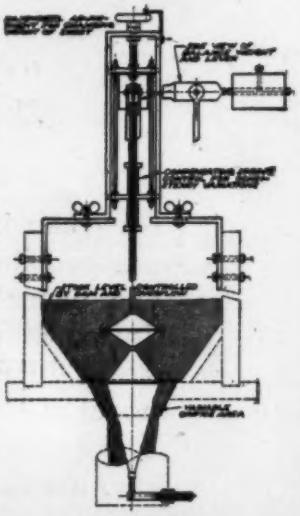

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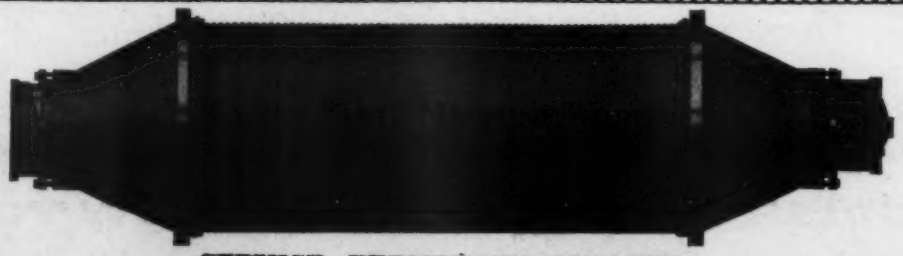

SERVICE - EFFICIENCY - QUALITY

See pages 344-345 in the 1928 Paper and Pulp Mill Catalogue

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International Bleaching Corporation

(OF DELAWARE)

An organization which has acquired basically important patents and process rights in the principal industrial countries of the world.

These include the well known American patents on pulp bleaching issued to

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The sole licensee and selling agent for the United States and Canada is

Pulp Bleaching Corporation

39 Cortlandt Street **New York City**

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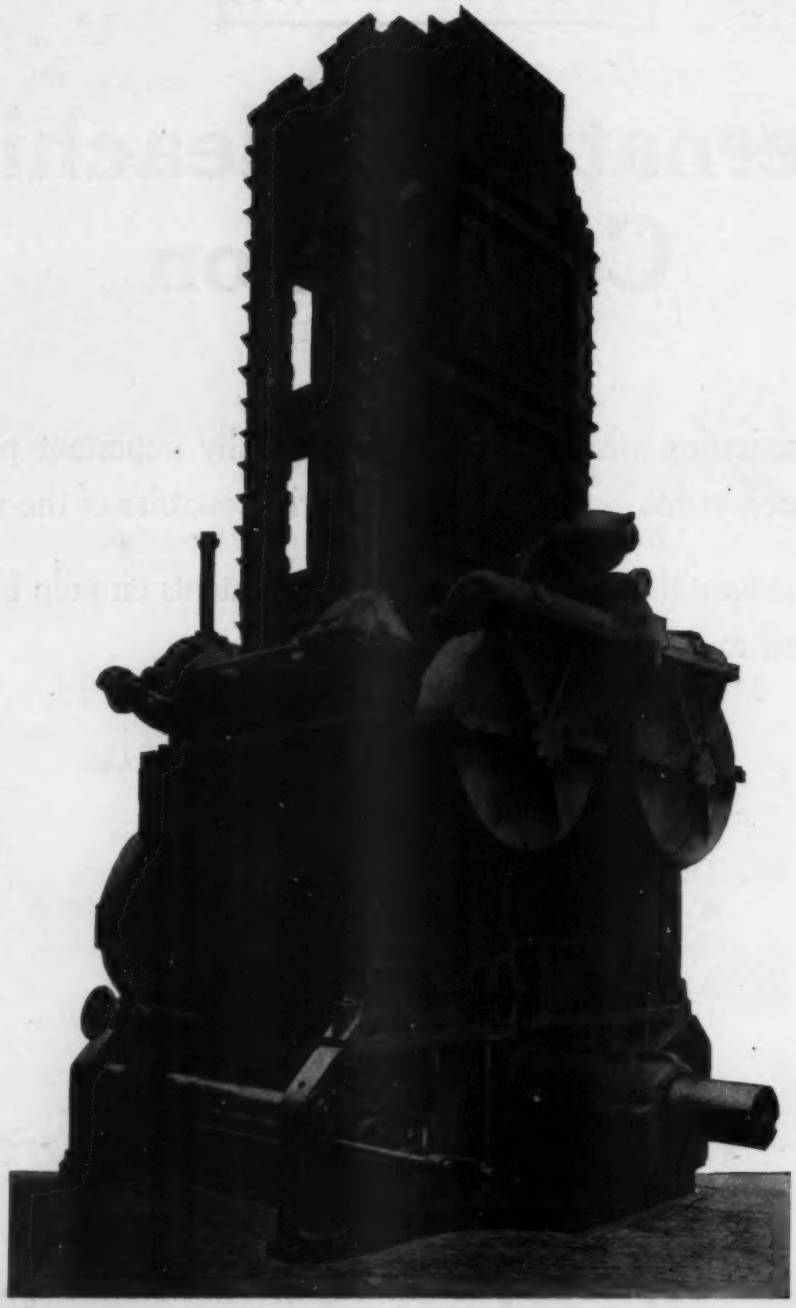

AMERICAN VOITH CONTACT COMPANY, Inc.

280 Madison Ave. New York City

The LENIX *Drive*

(Trademark Reg.)

200 H. P. Double Headed Motors with Lenixes Driving Beaters in Paper Mill

"5 POINTS"

1—The LENIX increases the arc of contact between belt and pulley.

2—The LENIX maintains constantly and accurately the proper tension in the slack side of the belt.

3—The LENIX saves floor space, building space, and belting because of freedom in pulley locations.

4—The LENIX saves in bearing friction, lubrication and renewal of bearings because of reduced bearing pressure.

5—The LENIX permits the use of less expensive, high speed and high efficiency motors or generators because of the higher pulley ratios.

"LENIX" Trademark Reg.

Booklet, "The Lenix Drive in the Paper Industry," tells more about the Lenix. A card will bring it to you.

A TYPICAL installation of Lenixes in connection with double-headed motors driving beaters is shown above. Note the compactness of the arrangement, there being no projections beyond the ends of the beater troughs. A clear passageway is provided.

The Lenix Short Center Belt Drive gives the much desired element of elasticity so essential for the success of beater drives. Beaters installed in pairs and driven by double-headed motors require a motor of a size only slightly above the combined full load of the two beaters. Individually driven beaters, however, require oversized motors, which are ordinarily operated at fractional load, to take care of the high starting torque.

The stretch of each of the belts is automaticaly taken up by the Lenix and used to increase the arcs of contact on the pulleys. Notice that one Lenix is in a lower position than the other, indicating that the two belts have stretched unevenly. This feature of uneven stretch makes open belt drives on double-headed motors less efficient.

The Lenix is in use in more than eighty paper mills in the United States and Canada.

See page 453 in the 1926 Paper and Pulp Mill Catalogue

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50 Church St., New York, N. Y.

Lindsay Wires

Have behind them a Record of

22 Years of Consistent Quality

Our Longerimp Fourdrinier Wires reduce Wire Costs to a minimum in Kraft and News Print Mills. Their extra long life does it.

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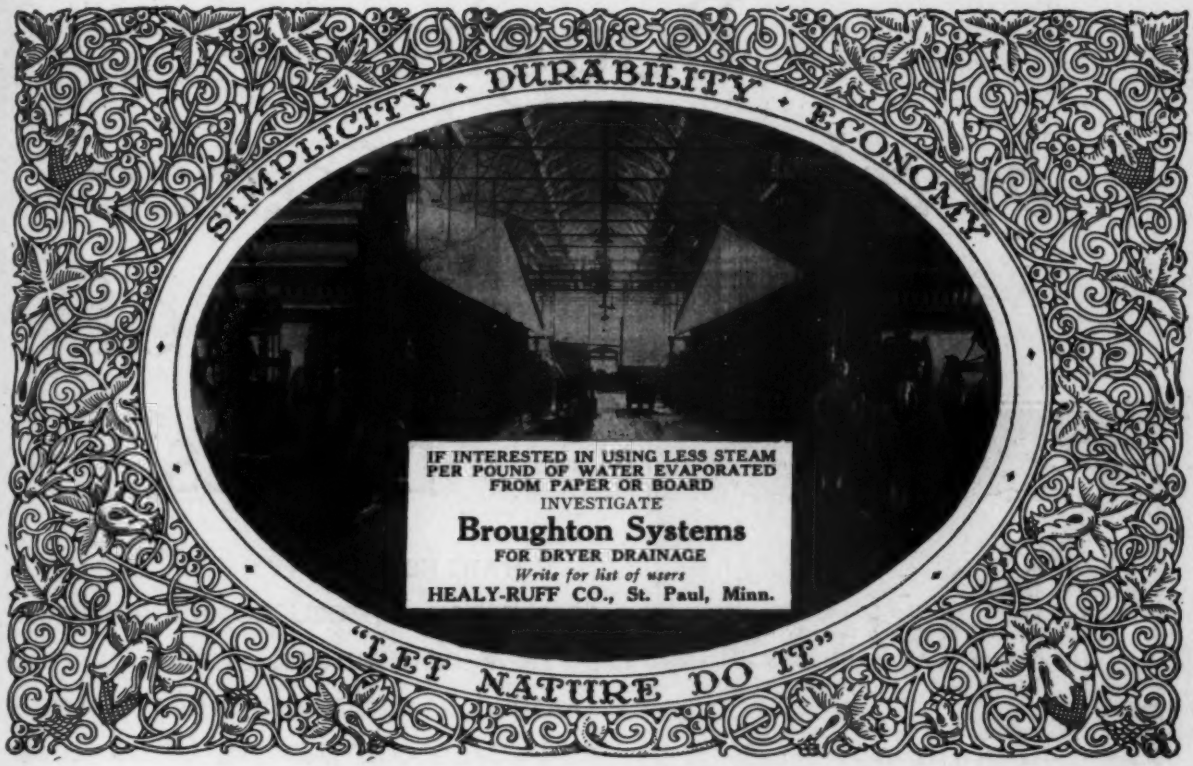
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FOR DRYER DRAINAGE
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"LET NATURE DO IT"

De Laval Worm Gear
A Superior Speed Reducer
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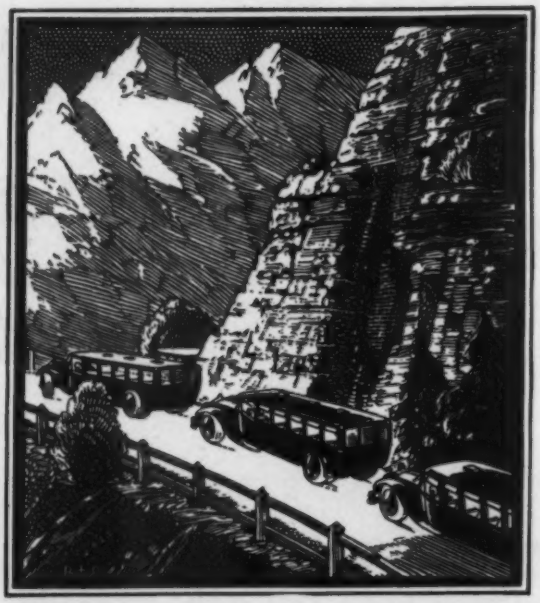


A CHARLESTON, WEST VIRGINIA, interurban railroad needed additional new equipment, quick. It telephoned a nationally known truck and coach company in Chicago for $20,000 worth of busses. Speeding in over the same lines came a call from Montreal for new busses—$40,000 worth. Long Distance rang again and Philadelphia placed an order—to the amount of $300,000. Travel would have meant delay and expense—all used Long Distance!

THE USE OF LONG DISTANCE is rapidly on the increase. Products are being bought and sold, time and travel are being saved by long distance calls.

There is hardly any limit to the use of Long Distance. When some large order is wanted in a hurry, when travel means delay and expense. In any situation—buying, selling, negotiating—the man who goes by telephone arrives first. He can discuss all details as in a personal interview, and he can have shipment started at once. His business doesn't have to wait.

We suggest, now, that call across the state or nation that would get some important thing done. We believe you would be surprised if you knew how little it would cost. . . . *Number, please?*

BELL LONG DISTANCE SERVICE

THE PAPER INDUSTRY

REG. U. S. PAT. OFF.

Vol. 8 MARCH, 1927 No. 12

Education in the Pulp and Paper Industry

By B. H. VAN OOT

State Supervisor of Trade and Industrial Education of Virginia

We are pleased to give special recognition to this valuable paper on vocational education by Mr. Van Oot, presented before the Southeastern Division meeting of Superintendents, in Richmond, Va., March 4, 1927, an account of which will be found elsewhere in this issue.

EDUCATION in any industry is not philanthropy. It is not social service work. It is not a scheme to keep employees so engaged that they will refrain from engaging in less desirable diversions. Some employers with whom I have discussed the problem of vocational education have taken the attitude that any activity in which the company may engage which is not strictly along production lines may be considered as personnel work designed to keep the employees contented. One argued that the employees prefer an increase in wages equal to a pro-rated amount of the money spent for educational classes. Another, after he had acquiesced to the demands for education coming from his employees stated, "Well, I figure I must give a certain amount of money each year to philanthropy and it might as well be along educational lines as any other."

Vocational education in any industry is purely a business proposition. It pays big dividends both to the employer, the employee, and to the public. The benefits to be derived from vocational education to all concerned are so familiar to those who have given any thought to the question that I hesitate to mention them at this time. However, I will review a few of the most outstanding benefits at the risk of repetition.

The conservative community is reluctant to receive anything new. Anything that deviates from the established order of things is received with suspicion. We, in the South, have become so accustomed to offering educational opportunities to the favored few, that is, to those who by virtue of their social and economic heritage are able to complete the high school and go through college, that we look with disfavor upon any program of education designed to meet the needs of any other class of persons.

Any democratic scheme of education should provide education for all classes of persons regardless of their occupation. The man or woman in the paper industry is just as much entitled to education and training at public expense, as is the doctor, the lawyer, the dentist, the engineer, or any of the other professions. They pay taxes which support the school system, and therefore are entitled to returns in the form of educational opportunities. The fact that they choose to make paper, fix pipes, keep records, and run machines instead of fixing teeth, mending sick bodies, running plumb lines, and defending criminals is no argument to prove that they should not be trained for the work which they do.

Value of Education to Industry

Of course, conditions are changing. Men of business sense are beginning to realize that they cannot meet the prevailing keen competition with raw, green, unskilled labor. They are beginning to realize that accident insurance rates are lessened with well-trained skilled employees. They are beginning to realize that a workman who can perform a piece of work without undue loss of motion and fatigue, or unnecessary waste in time and material, who can think a job through from beginning to end and arrange to have all materials and supplies on hand when they are needed, who knows modern up-to-date methods of production, who can make machines do the maximum amount of work of which they are capable, who knows how to distribute jobs so that the right jobs go to the men who can do them best, and who know the relation of the work they are doing to the

work that is necessary to be done by the others, who know that their mistakes or shortcomings reflect back to the company from the consumer, are valuable assets not only to the company but to the community as well. Industrial education strives to accomplish these aims.

Industry is continually paying dearly for inefficiency. An unskilled mechanic or workman in a paper mill, or anywhere else, may spend much valuable time in locating trouble and in determining what is necessary to be done. He may spend much time in attempting to do the thing which he has decided should be done, whether or not it is the correct thing to do. He is unskilled. He does not know. He makes a "stab" at doing something. His time is charged up to production, which of course increases costs. The skilled man, on the other hand, will be able to locate the trouble quickly, determine immediately what needs to be done, and go about doing it in a logical order. The work will be done well and the chances of a repetition of trouble will be lessened. The employer may have to pay higher wages for such a person, but he can afford to. The maxim "a highly paid skilled mechanic is cheaper in the end than the poorly paid poor mechanic" is applicable to the paper industry as well as to any other line of work.

Men who are not trained for their work, men who cannot see their jobs in relationship to the other jobs of the plant, men who cannot see any avenue of promotion on the job, and men who see in their jobs only a pay envelope at the end of the week soon lose interest in their work and quit. Turnover is thus increased, and turnover is always expensive. The time of executives devoted to the interview of a new employee, the time devoted to introduction to and instruction on the job, and the consequent slowing up of production, increase of waste and breakage, and the lowering of production and probably quality, are expensive propositions which could be reduced to a minimum if the men were properly trained for their work and took a proper interest in their work.

Any scheme of industrial training within the industry frequently brings to light talent which was not known to exist. Intelligence does not depend upon college graduation. There are many young men in industry today who possess just as high a degree of intelligence as is found among the best of college graduates. This talent is frequently buried because of lack of an opportunity for development. The same may be said of the colleges. Many intelligent young men, because of economic and social heritage, elect the path through industry as the road to success and I frequently think they have elected wisely. An educational program in an industry, therefore, offers an up-grading scheme whereby the young men of today become the executives of tomorrow. This is but one phase of education, so do not misunderstand me. The prime objective of vocational education is not to train men away from their jobs but rather to train men for their jobs. However, if in the process of training one finds superior talent wasted upon an inferior job, it is to the best interests of the company to place that talent where it will be to the advantage of the man and the company.

One of the large items in estimating the selling price of a manufactured product is the amount of waste involved in the manufacture of that product. This waste occurs in breakage of machines, unnecessary stoppage in processing, and the waste due to careless and improper inspection. In most industries, these forms of waste are caused by green hands, by men who do not know how to operate machines properly or who do not know how to take care of a machine. Waste of material is due to several causes —carelessness, ignorance, accidents, and indifference of the workmen. Industrial training is not a panacea for the cure of all of these evils, but a system of training with definite objectives in view will contribute largely to the reduction of these forms of waste and breakage to a minimum.

When men and women do not know how to work efficiently they must have constant supervision and individual instruction. This supervision and instruction consumes the time of the foremen and superintendents or of some person employed especially for this work. If the foreman is thus drawn away from other forms of work, which should have his attention, or if the responsibility for "looking out" for the work of the untrained man is given to a fellow workman as is sometimes done, both workers are required to give divided attention to their respective jobs. The foreman's time in the job is too valuable to be consumed in this manner, and to divide the time of another workman so that he may give instruction to a "green hand" is courting trouble, though the latter plan is frequently the best course to pursue. The time a fellow workman must devote to training or breaking in a "green hand" may be reduced to a minimum if the "green hand" is given a short intensive training course for his job.

Much space could be devoted to the discussion of similar benefits. Enough has been said, however, to show that vocational education is not a philanthropic undertaking but rather a sound business proposition.

Value to Community

Let us consider for a moment the other side of the question, namely, the benefits to the workman and the community. It is needless to say that when a workman is interested in his job and is well-trained for his job he is going to become a permanent resident of the community. Because of his increased efficiency and the resulting reduction of overhead, waste, and breakage, and because of the increased production, he is entitled to a greater wage for his labor. He builds his home. He has a balance in his pay envelope after he has purchased the necessities of

life. He, therefore, becomes a better citizen. He has a balance to purchase some of the finer necessities of life, if not the luxuries. He can better afford to educate his children. He pays more taxes. He patronizes the home stores. He is a better citizen.

Plans of Instruction

Frequently people entertain the idea that in order to offer any form of instruction a long drawn-out course of study is necessary. The idea is associated with college or high school instruction, which takes four years to complete. Fortunately, this idea of instruction is rapidly giving away to what is known as the short unit plan of instruction, wherein a definite amount of information concerning a definite job is taught in the shortest time possible. In other words, the whole field of vocation is broken up into "blocks," each block representing definite skills, knowledge, and attitude, which are needed in that specific block. The block in the paper industry may be represented by a job. To determine the skill, knowledge and attitude content of this job, an analysis of the job is made, and only such skills, knowledge and attitudes as are needed on a given job are taught at one time. This method of instruction has been criticized by our more learned associates in college instruction, who state that our methods are narrow and that they do not tend to develop a "well-rounded education,"—whatever that may mean.

This is an age of specialization and scientific application. To attempt to give workers a course of instruction which will cover everything is to miss the main objective of instruction. Our objective is to cover in instruction only those elements which a man needs on a given job to do that job. If the man needs or wants instruction on another level, he may enter another unit of instruction.

The vocational education committees of the Technical Association of the Pulp and Paper Industry in the United States and the Technical Section of the Canadian Pulp and Paper Association have, through their Joint Executives Committee, given much time and energy to the preparation of manuscrips dealing with the technical and mechanical operations of pulp and papermaking, and with preliminary subjects essential to a study of the technical matter.

Surveys and Studies Made

These manuscripts have been published by the McGraw-Hill Publishing Co., bound in five volumes and also in pamphlet form in sets corresponding to the individual cloth-bound volumes of the series. Unit courses dealing with groups of related subjects will also be provided to meet the special needs of certain workers; so that the beaterman, for instance, may be offered a unit dealing only with his own problems, a grinderman, a corresponding unit, etc. Much interest in these publications has been shown by both public school officials and by pulp and paper manufacturers.

In order that this material might be used to best advantage, the Joint Executive Committee arranged to make a survey of the pulp and paper industry, including an analysis of the principal payroll jobs. Mr. J. C. Wright, director for industrial education of the Federal Board for Vocational Education, made a survey of several different typical pulp and paper plants for the purpose of determining the jobs or occupation for which specific vocational training can and should be given. The survey was followed by an analysis of the principal jobs for the purpose of determining the specific character of the instruction which should be given for each group.

The manuscript for this bulletin has been prepared and published in order to emphasize the importance of vocational training, the kinds of schools and training agencies which may be used, and the manner in which the publications to be issued by the joint committee can be used most effectively.

The survey of the industry included visits to the Montrose division of the Provincial Paper Mills, Ltd., Thorold, Ont.; the Riordon Co., Ltd., Merritton, Ont.; the Ontario Paper Co., Ltd., Thorold, Ont.; the Brompton Pulp & Paper Co., Ltd., East Angus, Que.; and the Parsons division of the American Writing Paper Co., Holyoke, Mass.

The products of the above named plants include book paper, bonds, ledgers, envelopes, news, boards, mechanical pulp, sulphite pulp and sulphate pulp stock.

The analysis of the pay-roll jobs may be secured from the Federal Board of Vocational Education, Washington, or from the State Department of Education, Richmond, Virginia.

Foremanship Training

Any program of vocational education in any industry must have the active support of the superintendents. One method of securing this co-operation is to confer on improving foremanship in the industry. The State of Virginia maintains a foremanship training service which is free to the industries desiring the same. Recently, such a conference was conducted in the Standard Paper Co's. plant of Richmond with considerable success, if we are to judge by the expressions of the superintendents and foremen who participated in the conference. As an outgrowth of this conference, classes for the instruction of employees in the art of paper making will in all probability be started in the early fall.

Foremanship training in any plant is thoroughly justified even if other vocational classes are not organized. This service of the State Department of Vocational Education of Virginia has already been accepted by some sixty odd different industries or operations. If we take the written and verbal expressions of appreciation as a basis for judging the worth of the service, we find that the executives and foremen state that the foremanship conferences taught:

a—The analysis and identification of a foreman's responsibilities.
b—The reasons for an intelligent and acceptable discharge of these responsibilities.
c—The improvement of plant morale.
d—The bringing about of a more intelligent attitude towards the company.
e—The co-ordination of functional elements in the organization.
f—Co-operation.
g—A more intelligent handling of semi and unskilled help.
h—The necessity of bringing all workers up to a standard of efficiency.
i—The value of supervision.
j—How to minimize labor turnover.
k—How to minimize accidents.
l—How to secure better production, both in quality and quantity.
m—Increase interest and develop job pride.
n—The necessity of having instructional ability among foremen.
o—How to lower the costs of production.
p—An opportunity for the pooling of knowledge and experiences of all foremen.
q—Consideration of the utility and efficiency of various devices or schemes for putting over the above objectives.

Subject Matter Instruction

The training of employees in subject matter content would be different. An analysis of the jobs in a paper industry shows that employees need to know elementary mathematics, elementary applied physics, reading of drawings, applied mechanics and hydraulics, elements of electricity, considerable applied chemistry, preparation of rags, wood pulp and other fibres, treatment of waste paper, beating and refining, loading and engine sizing, coloring materials, knowledge of processing machines, hand-made papers, including molds and deckle, felts, vats, drying, sizing, finishing, water marks and deckle edges, tub sizing, paper finishing, kinds of coated papers, testing of papers, and general mill equipment, including pumps, electrical equipment, heating and ventilation, lubrication and water.

It readily can be seen that from the above list of subjects a very definite and practical course of study may be worked out, which will be applicable to groups of men on all levels of production—from the most unskilled to the highest skilled in the plant. Of course, details of subject matter must be worked out to meet the needs of individual plants.

Each of the topics listed above could form a "block" of instruction. These blocks may be arranged in the order of their learning difficulties and be presented by a competent instructor to the employees according to their special interests. Any attempt to teach workers subject matter which is far removed from the requirement of their specific jobs is doomed to failure. Men, as a rule, are interested in that subject matter content which is necessary for the successful performance of their work, or in that subject matter which is contained in any jobs on a higher level than the one in which they are working, provided they see that there is some avenue of advancement open to them.

Qualities in Instructors

The instructors of these vocational classes should be persons who are thoroughly familiar with the requirements of the jobs. They need not necessarily be technical graduates. The principal qualifications should be thorough mastery of the jobs taught, plus those qualities of leadership and personality which will win confidence in the instructor and respect for the type of instruction offered. The possibility of their making occasional mistakes in the English language amounts to little or nothing. The main objective is to teach papermaking—not English. They need to know practical papermaking as is practiced in the industry when the intruction is given, plus enough theory of the art of papermaking to intelligently explain the several processes and mechanics involved and to intelligently direct the thoughts of the learners and guide them in such collateral reading as may be necessary for a comprehensive knowledge of the paper industry.

The State of Virginia has set up a co-operative scheme with the several local school boards, whereby any industry within the state desiring to establish classes for their employees may be assured financial assistance as well as professional service from the state.

Competition is keen. The age of exploitation of natural and human resources has passed. The industries that will survive are the industries which conserve and develop natural and human resources to the end that each material used in the manufacture of paper will be made to produce to the maximum, and that each worker will be able to contribute all that he is capable of contributing and be happy in his endeavor.

Measurements in Paper Plants

ACCORDING to an investigation conducted by a prominent New York concern, 77 per cent of the paper industries in the United States make careful measurements of the fuel used in their power plants; 69 per cent measure the feed water; all meter the current used, and 54 per cent meter their steam.

It generally pays to meter everything: fuel, water, electricity, and steam, so as to know, always, just how much fuel is being used and what output is being obtained from that fuel. There is no better way in which to keep a constant check on over-all power plant efficiency and economy as well as on departmental efficiency and economy. (Schaphorst.)

Lessons in Paper Making

Lesson X—Variables

By HARRY WILLIAMSON
Class Instructor, Champion Fibre Co., Canton, N. C.

This article is the tenth of a series of lessons in practical paper making, appearing each month in The Paper Industry by arrangement with the Champion Fibre Company, Canton, N. C. These lessons are a part of the general educational course conducted by this company under the direction of Mr. J. Norman Spawn, educational director.

IT IS generally conceded that what is "under the hat" is the measure of a man's ability. In papermaking "what is under the feet" is equally important. Correlate the two, that is, "keep under the hat a comprehensive knowledge of the functions, and duties of the machinery under the feet," using such knowledge to interpret the conditions presented to the view on the machine, which will materially help towards successful operation.

Because of its **continuous** operation, papermaking demands intelligent co-operation perhaps more than any other process of manufacture. Variables, either from human or mechanical causes are our main source of trouble, and the resultant broke piles about our ears until the fault is rectified.

Old timers have in the past been apt to scoff at technical control. This attitude is dying out, and the papermaker of today must be prepared to interpret the reports received from the preparatory phases, and so arrange his furnish, beating, jordaning, and machine speed to obtain the best results.

The manufacture of pulp is a skilled operation complete in itself; bleaching the pulp is another, and the adequate development and transmission of power to maintain operation is a third.

The final negotiable product of a paper mill is saleable paper, and technical control becomes mere office routine failing in its objective if the paper mill superintendent is not notified **in time** of variable conditions in the main sources of his supply.

Of course, co-operation is synonymous with reciprocation, and from that angle we papermakers must possess a clear knowledge of our own local operating conditions to successfully trace either the probable **effect** from an anticipated cause, or the unknown **cause** from a resulting effect.

We would like for a moment to generalize with the mighty word **if.**

1. If the quality of the furnish is uniform.
2. If the density of furnish to the beaters, and from the beaters to the jordans is uniform.
3. If the generation and **transmission** of power is consistently translated into an even delivery of **revolutions** per **minute,** to the beaters and jordans,

then the stock delivered to the machine chest would be of such a uniform quality in its preparation, that the running of the paper machine would almost become a purely mechanical operation.

But the variables present in the raw materials used, the age of the tree, the rate of its growth, the location from which it is cut, the stacking and seasoning after cutting, the acidity or alkalinity of the stock or water, offer conditions which can only be leveled and made as nearly uniform as possible by **skilled** operation.

While we are inclined to grouch and grumble at variable conditions, we may console ourselves with the thought that **because** they exist, our skill is required to surmount them, and the application of that skill is reflected in the bulk of the pay envelope. How then, are we going to **earn** that pay rather than merely **acquire** it? By knowing **how** and **why.**

Quality of Furnish

Furnish can perhaps be better defined as "the percentage mixture of ingredients to produce a definite result."

As with the construction of building, according to the use to which it is to be put, so it is with paper. Three main requirements are essential, namely, a base, accessories, and trimmings. If the ultimate usage is to be utility, then the base, which is **strength,** and the accessories, which are **preservation,** must predominate. As we progress to the finer qualities, the trimmings, fillers, etc., become more nearly equal to the base.

The assessment of the furnish, and the treatment it shall receive, is primarily the duty of the superintendent and his immediate assistant. In this duty they can only function according to the information they receive as to the quality of the raw stock at their disposal. Should this quality be accurately determined and reported during the preparatory phases, then they can adjust their "tools"—the beaters, jordans, and machines to render the proper treatment.

Treatment

With the loading of the furnish to the beaters commences the last cycle in the conversion of cellulose into paper. To the true papermaker, there is something more significant in this than the prosaic earning of a livelihood.

The writer once had the privilege of organizing a Labor Day parade in a paper town, this same parade being backed by the facilities and finances of the Company. The first float artistically represented a section of the forest, growing trees, camp, brush, and the loggers in spiked boots carrying heavy poles and axes. The next float contained a complete section of the jack ladder hauling logs from the river to the saws on top of the float. In succession, there was a miniature chipper, digester, washing pit, grinder, thickener, beater, jordan and the reel end of the machine. A float containing a blacksmith's shop, another with a lathe, another containing that very necessary adjunct, a pretty girl pounding a typewriter, with the final picture being a miniature drawing room with the boss in a Morris chair reading the newspaper. He had a keen sense of humor and appreciated the point. The banner on the float was inscribed, "From the Forest to the Fireside." It was only a small town—just the paper mill—and when the parade marshalled in line, each department following its own float, the only spectators were the women and children. But enthusiasm ran high. Typified before our eyes was the romance and drama of a huge industry, not just a job—not just a daily grind—and we, each of us, formed an essential part, performed a duty, in this cycle of evolution.

Mr. Beater Man, whatever your job is, whether you are the foreman, engineer, or helper, **you can make or mar the result of all this effort** in your department.

As a machine room operative, the writer knows it is very nice when things are humming along in fine style to be able to say "I" did it. He also possesses in a large degree the human frailty to want to say "He" did it when things go wrong. The machine tender can make the best out of the stock delivered to him, he can even make good paper out of bad stock, **but not at a speed commercially profitable.** That is the crux of the situation. Show a profit, or eventually shut down and hunt another job.

Density and Revolutions per Minute

The above heading is the keynote to beating and jordaning. The spacing of the bars, their face width, their composition, are mechanical items of definite design and installation to give a treatment according to the grades of paper we intend to make.

The application of that treatment is **variable** as the grade of paper desired is variable. We may order a stiff brush, a light brush, a slow circulation, or a quick circulation. Whichever is ordered, make each beater **uniform** to that order.

After the stock has passed under the roll and over the back fall, it circles into a straightaway before again circling under the roll. Mark off a distance on the straightaway, and after the beater is loaded, and the roll down, **time** the circulation; get into the habit of quoting a six-second or a ten-second beater. It depends on the density ordered as to the time it takes for the stock to pass the marked distance.

With the use of the freeness tester, each beater of stock can be beaten to the same degree and a systematic check kept on the result. But that is not all. **Dumping** the beater is equally important. If jordans are not used, the dumping must be of even consistency to prevent **variation** in weight on the machine.

If jordaning is to follow beating, dumping becomes doubly important. We readily recognize the importance of equal density to the beaters; how much more so must we recognize its importance in jordaning?

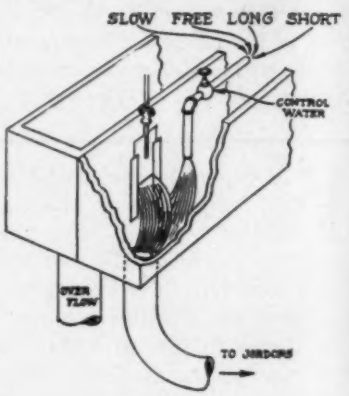


Figure 50

For jordaning is not a finishing process; it is accelerated beating.

With a liquid control recorder installed in the dumping chest, the operator has a visual record and check on the amount of water he lets go with each beater of stock.

The beater man uses the machine white water to furnish and dump his stock. The broke beater man draws his supply from the same source. The machine tender has first preference, and quite possibly the water for the slush thickener is drawn from the same line. As a consequence, **the pressure is not always the same,** and possibility exists in dumping, for a **variable density** delivered to the **jordans.**

At the control gate delivering the stock to the feed pipe of the jordans, we usually install a 1" to 1½" water line. Granted an even density delivery up to this point, the regulation of the stream of water from this line is of the first importance.

If the valve were cast in metal in proportion to the value of its operation, then we would need a valve of shiny gold with a platinum seat.

By its regulation, and that means the regulation of the **density of stock** permitted to enter the jordans, stock can be made short, free, slow, or long **without altering the position of the jordan plugs.** (Fig. 50.)

Should it be necessary to check the amount of stock entering the machine chest by shutting off a little from the source of supply, remember that the water from this feed line is as important as the stock, and **shut off** a proportion of both. If stock only is shut off, then the density delivered to the jordans will be lighter, and the whole treatment in the jordans will change. In the above instance the stock would become shorter and freer.

This line supplying the **control water** to the jordan

delivery box should not be made the source of supply for any other purpose, so that the pressure and volume delivered shall be subject only to the alteration of the operator.

As we realize the tremendous importance of this small stream of water in relation to the preparation of the stock in the jordans, we may revert again to the dumping of the beater, and contemplate the fallibility of dropping a hundred gallons of water more than the previous beater, and then expect the same degree of hydration in the stock.

Mr. Beater Man, watch the possibility of your variables and rest your feet. An increase in the hydration of the fiber will deepen your shade. A freer sheet will lighten your shade. An increase in the density delivered to the jordan will lengthen the fiber and increase the hydration.

If the stock becomes too slow, you will probably have to ease off the jordan plug. Then when the density becomes lighter again, the stock becomes freer and shorter, and you have to go back where you started. The whole weary cycle again and again, to say little of the changes required on the machine.

Guard against the **variable density**, and you can leave your jordan plugs set.

There is one variable the beater man cannot guard against, and that is, **variation in the number of revolutions per minute transmitted to beater rolls and jordan plugs.**

Power transmitted cannot be said to be adequate unless it will maintain the **same** number of revolutions on the heaviest density used.

Beating and jordaning is a treatment of fiber calculated on the number of **bar strokes** delivered to the fiber per minute. The number and spacing of the **bars** are carefully calculated before installation. A reduction in revolutions per minute is equivalent to tearing out a number of bars, necessitating a longer beating time. Therefore, where beaters only are used, the treatment of the stock can be equalized by increasing the time in the beater, should a reduction in power occur.

In the jordans, however, it is not a question of time; the stock is in continuous flow from inlet to outlet, but the operation is essentially one of **bar strokes** per minute. Moreover, the jordans feed directly to the machine chest, and from the instant the revolutions of the jordan plugs slow down, a coarser, freer, longer stock is being mixed with the content already in the machine chest to the detriment of the quality of the finished paper. We see, therefore, it is not merely a question of the amount of stock actually passed through the jordans under a low power influence, but a question of how much stock will this coarser fiber be mixed with. Usually, at least two beaters of stock are kept in the machine chest. An amount of 3600 lbs., receiving a coarser fiber, even for a period of ten minutes from the jordans, will result in a freer and longer fibered stock being delivered from the machine for the whole chest content. This is equivalent to almost one hour's run, and the machine tender would have to adjust his machine or let his quality suffer. His formation would not be so good, due to the longer fiber. Possibly he would have to put on water, or slow down the machine.

The freer sheet would tighten up the draws, and these would have to be eased forward or snapping off would occur at the dry end. As the voltage is increased, and the revolutions attain normalcy, the fiber again receives its original treatment, and the whole operation on the machine must be gone over again in reverse. It is assumed that a consistent quality of paper, no matter what grade is being made, is desired.

The speed and production of the machine is only equal to the capacity of the beaters and jordans to provide it with a consistently treated amount of stock. This is governed in turn by the amount of power transmitted into **revolutions per minute**, and translated into **bar strokes per minute** delivered to the fiber.

Quick action on the part of the beater room operator can ameliorate the trouble, should the power become temporarily low. Shut down a beater, or even two, until the power recovers. An extension of beating time is a remedy that can be applied to the beaters.

Time is not a remedy for this particular evil in the jordaning. The power conserved by shutting down the beaters will be applied to the jordans, thus keeping up the revolutions of the most important unit in an emergency. Whether the number of revolutions per minute be high or low is a question of voltage available. If they are **maintained**, the quality of the stock will be **uniform.**

Density control and revolutions per minute—eliminate the variables in these two, then the broke beater can go on short time.

Under the Feet

This phrase is just as applicable to the machine tender as the phrase "'under the hood" is to the automobilist who starts off on a coast to coast run. Both must have a sound knowledge of the machinery under their control **not** in view, if they expect to operate successfully.

The beater room is charged with responsibility of delivering to the machine chest a uniform and adequate supply of stock to meet the requirements of the machine. From this point to the scales, the responsibility of production belongs to the machine room.

The power control of the machine is divided into two distinct parts. The **constant speed**, so called because it runs at its full capacity irrespective of the basis weight being made, and the **variable speed**, so called because it is increased or reduced according to the basis weight.

The constant speed has control of the source of supply, driving the stock pump, the water pump, and the screens. It also drives the suction pumps, returning the water from them into the cycle, and drives the shake. Running as it does at its full capacity, the amount of stock and water permitted to enter the screen collection troughs, is regulated by valves and gates. The amount not required is **overflow** to again enter the cycle.

The stock and water is therefore constantly delivered against pressure, and from this we see that **providing the overflow of stock and water is maintained,** with the possible exception of air slugs in the water line, there will not be a **variation** in **volume** delivery up to the screen control gates. There can be, however, a variation in the **weight** of that volume, as we know the greater the hydration, the heavier the fiber. That variable belongs to the beater room. The **variables** of the machine room commence at the screen control gates.

The transmission of power is a very important factor in the screening of stock. The rotary screens are designed to revolve at a speed which will bring each plate under the influence of a certain number of compression strokes, screening the stock, and then revolving past the shower spray to be cleaned.

Should the number of compression strokes be reduced either through low power or faulty transmission, the screen will fill up **holding back** the volume which should be consistently delivered from the screens to the head box.

Slack or slipping belts, dry gears, tight collars on rotary screens, broken or worn cams, worn out toe blocks, and worn or slack diaphragms on flat screens, will cause **ebbing** and **flowing** of volume through the screen, which in turn means **dry** and **wet** paper at the reel end.

How Suggestion Systems Operate

Description of Two Practical Methods in Use

THE "instinct to create" is being fostered more and more among manufacturing organizations anxious to have their employees express and produce valuable suggestions for the mutual good of the plant and the workers. Suggestion systems, as described in this article, are encouraged by means of offering a cash award for the suggestions adopted and put into effect. They are in practical use at the Mead Pulp & Paper Co., Chillicothe, Ohio, and Bird & Son, Inc., East Walpole, Mass.

The Mead Plan

The Mead Pulp & Paper Co., Chillicothe, Ohio, a most modern mill, is always on the lookout for new ideas and new thoughts that will stimulate production, bring better results to the workers, and increase the value of their product in the ultimate analysis. "Mead Co-operation," its motto, which pervades throughout the entire establishment, helped put a suggestion system into working and effective order.

All employees are urged to submit new ideas to a suggestion committee, composed of the manager of the mutual relations department, the plant superintendent, and the master mechanic. Suggestions pertaining to safety are referred by this committee to a special committee, composed of the safety director, chairman of the plant safety committee and one other member of the safety committee, which in turn investigates the suggestion. When found to be a good one, the suggestion is referred back to the original committee, together with a recommendation that an award be paid.

Suggestions not having to do directly with safety are investigated by the original committee with the help and advice of foremen and department heads. (See Fig. I.)

It is interesting to know that since the suggestion system was adopted in the Chillicothe Division mill, April, 1920, including the 1926 totals, 1,652 suggestions have been received from employees, of which number 398 have been adopted and paid for in cash awards.

The initial award ranges from a minimum of $2.00 to maximum. Employees submitting suggestions are notified by the original committee of the action taken, and when the suggestion is adopted a check covering the amount of the award accompanies this notification.

A standard suggestion form (See Fig. II and III) is used, and these forms are distributed at various convenient points throughout the plant. They are collected daily and delivered to the chairman of the suggestion committee.

In addition to the initial award made upon the acceptance of suggestions, there is a grand prize of $50.00 in cash awarded at the end of the year for the best all-round suggestion. For the year 1927 two additional grand prizes of $100.00 and $50.00 are being offered by the company for the first and second best suggestions received during the year, resulting in the greatest economies and saving in the plant—1927 being known as "Greater Economy" year.

The success of this plan has encouraged them to continue its use, and the Mead company must certainly see the value of fostering the interest of its employees in improvements of various kinds, or it

SUGGESTION BLANK

THE MEAD PULP & PAPER COMPANY

Suggestions are always welcome which will decrease the danger of accidents to yourself or your fellow workers; eliminate fire hazards; increase the effectiveness of fire extinguishment methods or equipment; better working conditions; decrease waste of materials, power, space, or labor; improve methods or processes of manufacture; improve machines or the quality of products; or make possible the manufacture of new products.

All suggestions adopted are of value, and an award will be made according to its merit.

In making suggestions, be sure to define and explain as clearly as possible, naming article, part numbers, particular machines, and operations affected. When applicable to a machine, please give machine number and location.

Prize Awards

	Minimum	Maximum
1. Improvement in product	$5.00	None
2. Reduction in costs	5.00	None
3. Improvement in manufacturing methods or machinery, not directly affecting products or costs	5.00	None
4. Reduction of accident and fire hazards	2.00	$10.00
5. Conveniences	1.00	5.00

Date _____

To the Suggestion Committee:

I desire to submit the following suggestion: _____

_____

_____

_____

_____

_____

_____

SUGGESTION No. _____

(Figure II—Mead form)

Signed _____

Department _____

Make sketches on separate sheet. Do not use other side. Use additional sheets of blank paper if necessary. Receipt of this suggestion will be acknowledged.

SUGGESTION

USE THIS SHEET NOW

Date _____

Subject _____

Name of Suggestor _____ *Dept. and No.* _____

I SUGGEST:

(Figure IV—Bird form)

DO NOT WRITE IN THIS SPACE

Acknowledged _____ Suggestor Notified _____

Referred to _____ Supt. Notified _____

Considered _____ Card. _____

Disposition _____

Reconsidered _____

Final Disposition _____

would have abolished its use, long before this. The diminishing rate of its accident record alone is indicative of the value of inspiring the interest of the employees in creating measures to improve the safety of the workers.

Bird & Son's Plan

Another mill, in East Walpole, Mass., has obtained astoundingly good results with its suggestion system.

Please Reply to These Questions in Full, if Possible

1. Is the main idea of this suggestion practical or not?.....
2. What part of suggestion is practical, if any?.....
3. Is the idea new in our practice?.....
5. If so, who has the matter in hand?.....
6. Do you think the adoption of this suggestion will:
   (a) Improve the product?.....
   (b) Reduce the cost?.....
   (c) Improve the manufacturing methods, not directly affecting costs?.....
   (d) Reduce accident and fire hazards?.....
   (e) Be a convenience?.....
7. Do you recommend adoption of suggestion?.....If not, why not?.....
8. What additional material, labor, or power would be necessary if adopted?.....
9. Estimated cost of additional items.....
10. What is your estimate of the financial savings that would result if this idea is adopted?.....
11. Can you recommend a better solution of this problem?.....

Date.....

Signed.....

(Use additional sheets of blank paper if necessary)

Figure I—Mead form

tem. Although it carries the same goal as the Mead plan—a cash prize—its method has some different characteristics worthy of note.

All suggestions, when submitted, are thoroughly investigated by the superintendent, or head of the department if the suggestion comes from the office. During the past year, however, the company used a special investigator who reported on all suggestions submitted, and his good results came from an ability to draw the workers out more on the subject, devoting more time to the work, and ultimately obtaining a greater comprehensive knowledge of all suggestions. When the superintendent, or head of a department, serves as initial investigator, he becomes thoroughly acquainted with working conditions. Both methods have their advantages. But whether it is the superintendent, head of a department, or special investigator who takes the suggestion under his wing in the start, he in turn gives it to the suggestion committee, composed of executives, from all departments, who finally give it to the final award committee, made up of the president, vice-president and general manufacturing manager.

It is gratifying to note from Bird & Son records that this company has had a suggestion system in continuous operation since 1912, with the satisfaction in 1926 of realizing 987 submitted, 271 of these accepted, and $1,970 being paid out in awards for them.

In a brilliant printed announcement, placed at various points in the plant, the worker's attention is called to the purpose of their suggestion system, which is given as "one to promote interest in better methods and conditions and desire for suggestions along the following lines: development of new products; improvement in quality of products; improvement in safety appliances; reduction of cost of products; increase in production; improvement of present methods; elimination of unnecessary work; increase in sales of their product, and reduction of waste."

The scale of awards in this company is interesting

RECORD OF ACTION

Date Received
Date Acknowledged

SUGGESTION No.....

Suggestor should not use this side of sheet.

Referred to	Date	Date Returned	Remarks

Estimated cost of carrying out suggestion.....

Estimated saving resulting from adoption of suggestion.....

Adopted or Rejected.....Date.....

Award.....

Suggestor Notified; Date.....

Figure III—Mead form

as well. For each accepted suggestion, $5.00 is paid. One hundred dollars is the cash prize awarded for the largest number of suggestions accepted annually; $50.00 for the second largest number of suggestions accepted annually, and $25.00 for the third largest

number of suggestions accepted annually. One hundred dollars is offered for the best suggestion received in the year; $50.00 for the second best suggestion, and $100.00 for any suggestion on which a patent is obtained and assigned to Bird & Son, Inc. Special awards for suggestions of unusual merit are given.

The employees are not limited as to the number of suggestions they may submit, but each one must be written on a separate sheet of their standard suggestion form (See Fig. IV), and may be placed in a suggestion box stationed at various points in the plant, or mailed to the secretary of the suggestion committee. A sketch is asked for whenever possible, and there are men in the establishment equipped to assist any man unable to make a sketch of his particular suggestion. Awards for suggestions are made to all employees excepting heads of departments, foremen, employees on development work, and members of the suggestion and executive committee, who review the ideas and make the awards.

Enthusiasm for both systems in these companies is kept up by news items and data given monthly in their respective house-organs, "Mead Co-operation" and "Bird's Neponset Review."

The fact that the two systems explained above have been in operation for some years points to their practical value. The two plans have interesting points in common, but each has characteristics which make it stand out as individual. As food for thought to the manufacturer who has long been seeking a plan to foster the creative instinct in his workers, they should be the seed of what is destined to bring greater co-operation between manufacturer and worker, increased safety and better working conditions, and the ultimate improvement of the industry as a whole.

Pointers for the Engineer

W. F. SCHAPHORST, M. E.

Recording Meters

THE plant engineer of a well known paper company in Wisconsin writes very interestingly on the value of recording meters in his plant. He says that owing to the steam flow meter he has been able to increase the rating of his boilers very considerably. He gets 4 h.p. from a given amount of coal now where formerly he got only 3 h.p. He declares that if it hadn't been for his steam flow meters it would have been necessary to have enlarged the plant. In other words, he is now handling a much greater load with the same boilers. The money saving has been decidedly worth while. Using his own words, he pays this tribute to meters:

> "Meters are valuable as watch dogs, constantly alert to prevent needless waste. They are ceaseless, inoffensive drivers. They proclaim errors in faulty operation and often protect the innocent. They lead the way to better products and more efficient operation. They establish at times a goal, a high mark which is valuable as a record to 'shoot at.' They prepare the way for friendly competition, which injects a touch of 'the game' into a man's routine of work. And, finally, their presence is, in short, indicative of good management."

Ruining "On-Trial" Machines

IT IS not uncommon for manufacturers of some classes of machinery to ship their machines to seemingly reliable concerns on an "on-trial basis." Frequently the manufacturer is willing that the trial should last one, two or three months, and if not satisfactory at the end of that time the prospective purchaser is allowed to return the equipment without expense. Money is often refunded.

Purchasers have a right to take advantage of offers of that kind and in the great majority of instances they are careful and considerate, giving the equipment every opportunity to make good.

But every once in a while machines are returned in a ruined condition. Unless sufficient care is exercised when installing certain machines, it is possible to injure delicate parts to such an extent that the machine cannot be used under any circumstances. Thus, pipe fittings are badly wrenched, valve seats are battered, shafts are bent, pipe connections are bent, threads are hammered, castings are broken, etc.

The machine is usually returned with the curt explanation that it "could not be made to work," that it was "unsatisfactory," or some such excuse, whereas the trouble is generally blamable to the user himself and not to the manufacturer.

In most instances manufacturers who have sufficient faith in their products to sell them on a long trial basis are careful to send out nothing but high quality equipment. Manufacturers who have been in business for many years and who have made a reputation for themselves can usually be depended upon to provide machinery that will not fail.

A prominent manufacturer of my acquaintance who sells his products all over the world paid a high tribute to the Japanese. He said that he does a large business in Japan and that after he ships his products to Japan he never hears of them again. His explanation is that the Japanese are good mechanics, follow

installation directions carefully, and are intelligent operators. This manufacturer has vastly more trouble with products that he sells in the United States.

"Perfect"

THE nerve of one prominent manufacturer (not in the paper making business, by the way), has often caused me to marvel. He advertises his product as being "absolutely perfect."

Everybody knows very well that his product is NOT perfect. It cannot be perfect in construction. It wears out. It breaks easily because it is delicate. And so on. Yet this manufacturer "gets away with it."

I'll admit that his product is of excellent quality. So far as I know it is superior to the similar product made by most of his competitors. But I believe that some of the competitors make a product that is just as good and possibly better, and they don't call theirs "perfect."

Have you ever really tried to imagine what a perfect machine or tool would be like? Have you ever tried to write specifications for a perfect machine? I maintain that it cannot be done.

For example, take one of the simplest tools of all—a crow-bar. What would a perfect crow-bar be like? It should have infinite strength. It should not bend. Its length should be variable to meet every condition. It should not weigh anything. It should not hurt the hands of the operator. And a number of other impossible things.

A nail hammer should not possess weight on the up-stroke, but it should possess weight on the down-stroke. It should have infinite strength. Should not break or become dented. It should be made so that it would never miss the nail, etc.

These are my ideas of a "perfect" tool, yet I may be shooting considerably under the mark. In heaven, where weightless, dimensionless, perfect tools may exist, the users of those tools are probably looking down upon me and smiling knowingly at each other because of my elementary conception of perfection. What is a perfect tool? I don't know. Do you?

The Enormous Oil Industry

I BELIEVE that few paper mill engineers are aware of the fact that in the United States there are 85,000 miles of oil pipe lines. Four miles an hour is the average rate at which crude oil is transmitted through pipe lines.

These pipe lines stretch nearly across the entire United States and are broken only by the Rocky Mountains.

Two million barrels of crude oil are handled daily through these lines.

Eight hundred million dollars are invested in oil pipe lines alone as compared with $450,000,000 in tank steamers, $300,000,000 in tank cars, and $100,000,000 in tank trucks. This makes a total investment of $1,650,000,000 for moving the oil of this country.

Pacific Coast Opportunities for Kraft Pulp Manufacture

By B. T. McBAIN
Portland, Oregon

THE raw material for sulphate or kraft pulp is wood, and the peculiarity of the sulphate process is that practically any kind of wood can be used, whereas in other chemical processes the wood is limited almost entirely to hemlock and spruce. It can readily be seen from this that this method of making pulp is one that can be run in conjunction with saw mills where various kinds of wood are cut up, leaving an enormous amount of waste material suitable for pulp making purposes. As a matter of fact, it is estimated by various authorities that of the cubical content of logs that go through the saw mill, only about 50 to 60 per cent comes out in salable merchandise, the balance being waste which must be disposed of, generally through burning.

This principle of using the waste from sawmills for sulphate pulp making purposes has been in operation in Scandinavia, especially in Sweden, for the last 20 years, and has been the main reason why the lumber companies in Sweden have been able to operate successfully in spite of the depressed state of the lumber industry. On account of the small size of the logs used in the Swedish lumber mills, the waste is comparatively small; on the west coast of America, the enormous size of the logs and rapid operation brings about a proportionately larger waste. These western logs run as large as ten feet in diameter.

Furthermore, the waste from the mills on the Pacific Coast is in many respects more suitable for pulp making than the waste from the Swedish mills, owing to the comparative freedom from knots and the ease with which bark can be separated from the wood. A further advantage of the Pacific Coast over the Scandinavian countries is the size of the sawmills. In Scandinavia the mills are small, and therefore it is necessary to draw from many sawmills before a pulp mill can get sufficient raw material for the operation of even the smallest size mill. On the Pacific Coast, mills are so large and located so close to each other that one or two of the large mills are sufficient to supply an average sized pulp mill with all their requirements of waste wood both for fuel and for raw material for pulp.

In this connection, it might be mentioned that all steam and power at the pulp mill can be generated

from waste wood not suitable for pulp together with saw dust and bark which is always available in large quantities.

The kraft pulp industry has already been developed to such an extent in Europe that there is hardly a pulp mill that can depend entirely upon sawmill waste for their raw material and most of them are obliged to use logs for pulp making purposes, which brings the cost of the raw material comparatively higher.

On this continent, pulp business of this kind has been developed on the basis of two distinctly separate principles. In Canada and the Northern States, the basis for the industry is logs brought down from the woods. The other principle is down South where it first started, on the basis of which it is proposing to build up an industry on the Pacific Coast, namely, the basis of sawmill waste. The industry in the South, however, grew so rapidly that the sawmill waste was not sufficient and it was therefore found necessary to resort to the method of the North, namely the use of logs, making operation considerably more expensive.

Pulp Production

The amount of pulp manufactured in the North in 1925 was approximately 230,000 tons and included the following states: Maine, Pennsylvania, Michigan, Minnesota and Wisconsin; in the South it was about 300,000 tons and included the States of Georgia, Louisiana, Mississippi, North Carolina, Virginia and Texas; in Canada the amount manufactured was around 200,000 tons, and on the Pacific Coast 30,000, by a mill located in the State of Washington, and one in Oregon. Practically all of this pulp is manufactured direct into paper or boards and therefore is not available for sale. In Eastern Canada there are two mills manufacturing pulp for sale in the United States, and the total exported from Canada has averaged during the last few years about 100,000 tons a year. The remaining requirements of this kind of pulp have been brought from Europe and the importation in 1926 totalled about 300,000 tons or 1,000 tons daily from Europe.

The users of this kind of pulp are, as already mentioned, paper and board mills, and they are located in the New England States, Eastern States (New York, New Jersey and Pennsylvania) and in the Middle Western States (Michigan, Ohio, Indiana, Illinois and Wisconsin). These mills have no source of supply of raw materials of their own nor have they any possibility of arranging for such a supply and must therefore depend on outside sources. There is no kraft pulp mill in the United States operating exclusively for making pulp for sale but there are times when some of the mills both in the South and in the Middle West have some small surplus for sale. This is therefore of very small importance.

Transportation

The Eastern Canadian pulp is brought down by rail to the United States and the average freight rate varies from $6.00 to $12.00 per dry ton to the consumers. The European pulp is brought in by steamer to the Atlantic Seaboard ports from where it is distributed to the consumers by rail. These two sources are those with which West Coast pulp will have to compete. The freight rate from Scandinavia varies from about $4.50 to $5.50 per ton to the Atlantic Seaboard, and the freight rate from the Pacific Coast will be about $5.00 to $6.00 per ton, putting the latter on a fairly competitive basis with the Scandinavian mills. The rail rates to consumers are the same.

The cost of this kind of pulp depends on the cost of the raw materials as the conversion cost is approximately the same everywhere except steam. The unit for wood is a cord and it takes about two cords of wood, measured after bark is removed, to make a ton of pulp. The cost of pulpwood in the United States and Canada varies, according to the quality of the wood and the location of the mill, from about $12 to $18 per cord of wood and the average is about $15. In the South, I have been told, the cost of wood, including waste from saw mills, averages about $6 per cord. In Scandinavia, the cost varies from $10 to $15 a cord including sawmill waste. On the Pacific Coast, this mill waste is available at practically no initial cost; more than ever will be used, but taking into consideration the cost of selecting and handling wood, it is estimated that the average cost delivered at the pulp mill will be from $3 to $4 per cord, including the logging camp waste.

It will be seen from the above figures that whereas the cost of raw material for a ton of pulp on the West Coast will be from $6 to $8, the Northern American, Canadian and Scandinavian mills have a cost for raw material that varies from $20 to $35 per ton of pulp. In the South, the cost is at least $12, but on the other hand, the quality of wood obtainable in the South is not as good as the Pacific Coast varieties. The cost of conversion is about $20 per ton in the East, slightly less with hog fuel.

This pulp is sold at a price per 100 pounds of American ton of 2000 lbs., which latter I am using here and the price is taken on exdock Atlantic Seaboard basis. This pulp was selling before the war at about $36 to $38 per ton, and rose during the war to as high as $140 to $160 during the inflation of 1920. Since business became stabilized, prices have varied from $50 to $70 per ton. It is at present about $60 and I believe that the average price during the last five years can be put at $58 per ton.

The necessary requirements for the establishment of a successful pulp mill of this kind are sufficient supply of fresh water and wood. It is estimated that a 100-ton mill, when properly handled, will require about five million gallons of water daily. A minimum of 200 cords of waste wood is required. It is estimated that any mill cutting 600,000 feet a day or more, will be sufficient to supply the amount of waste wood required.

Editorial Comment

By WILLIAM SIBLEY

Stimulating Safety Through the Internal House Organ

DURING the past year, the National Safety Council conducted a prize contest for plant magazines. The house organs were judged by a competent committee on a point basis, according to the following scale:

Safety	40 points
General Interest ideas	20 points
Educational ideas	15 points
General character	10 points
Make-up	10 points
Unusual features	5 points
	100 points

The magazines were judged on a point, rather than a percentage basis. This means that 40 per cent of a house organ need not be devoted to safety in order to earn a rating of 40 points in that division. In fact, one or two good safety pages might count for much more than a half dozen mediocre ones.

Similarly the other items in house organ make-up were judged on a quality rather than a quantity basis. The comparative size of the various plant publications, and the facilities of their editors were also taken into consideration.

Final awards of the judging committees were somewhat of a surprise to many house organ editors. Without going into the details of the final standing it is sufficient to say that many establishments were disappointed to find their publication so far down in the list.

One of the best ways to learn and to grow is by seeking the reason for the success of the leaders and then profiting by this knowledge. A few remarks on the general aims of a good plant publication, and on some of the methods followed by the successful house organ editors might therefore prove helpful.

The primary function of a successful employee's magazine should be:

1—Creating good-will, company spirit and co-operation.

2—Developing pride in the job, spreading news of promotions, awards and plant advantages.

3—Safety education.

4—Mental advancement, thrift, sound economic and technical or process education.

5—Home stimulation and family good-will development.

Since the subject of safety education is one of the major reasons for the existence of house organs, let us see how some of the successful publications handle safety data in their columns.

More than 75 per cent of the industrial accidents that occur are due to the personal equation. The mere adoption of mechanical safeguards will therefore by no means eliminate such accidents. It is only by educating the workers to **think** and **act** safely that safety records can be established and maintained. Accordingly, safety education is a mixture of psychology of the human emotions, coupled with the best methods of putting the lessons across.

In an issue of one of the leading house organs, the principal article tells how one department's safety record was broken by John Jones who slipped and sprained his knee on a wet floor. Mr. Jones' name is played up in the headline with the result that he was subjected to considerable "kidding" by fellow employees. Nevertheless, his fellow workers were careless in not properly cleaning up the floor so that Jones, in not watching his step, was hurt, partly because of the negligence of others.

In many successful magazines, accident occurrences are turned into news items. The victim's name is featured, the complete details of the accident are given, and the physical sufferings and economic losses are pointed out. Following such news stories, ways and means for preventing such accidents are always outlined. Another good practice is to publish safety pictures, posed for by the employees themselves. Such pictures appeal both to the posers and their fellow workers. Some plants find the humorous cartoon with an underlying safety lesson more effective than the "horror" pictures.

Health articles by the plant physician, or by a neighborhood doctor known to many of the workers, are also efficient safety stimulants. A good location for these articles in the magazine is among the home news, family or women's pages, where they will receive the support of the home folks.

Preaching and patronizing attitudes should be avoided. The editor should get out on the "field of action" to learn the particular items and desires of each group in the plant. For example, the men in the packing room were trying to keep their department records free from a lost-time accident blemish. One of the workers had a finger badly cut. The injury was properly dressed by the plant physician, and the worker insisted on going back to work instead of staying home a day or two just to help keep the de-

—— on Timely Subjects

partment record 100 per cent clean. The editor played up this story properly, and soon other departments began to request write-ups.

Safety is a state of mind, as well as a habit. Stimulation must be constant, but varied and interesting. One suggestion is to feature individual subjects in each issue, as for example, goggles, then proper shop clothing, then small tools, etc. Articles on safety in the home are also helpful. Attractive posters and safety bulletins help greatly, as do slogans, limericks and mottos.

The development of the employees' interest in the magazine, encouraging them to contribute articles, and to foster the teachings of the publication—these are concomitant builders of a successful plant publication.

Portable Electric Tools Are Dividend Payers

COINCIDENT with the development of machine tools has come the steady increase in the variety of portable electric tools. These are, in effect, merely small motors with a gear on one end of the armature shaft, and with tool stocks and tools directly geared to the motor. In the beginning, only hammers and drills were made, but with growing demand additional tools have been designed with the result that we now have electrically driven wrenches, screw drivers, and similar tools. So rapid has been the adoption of these handy time and labor saving devices that more than 600,000 are now in use.

While no one doubts the worthiness of stationary drills, hammers and grinders, there are countless jobs which cannot be easily brought to the fixed machines. Thus it is, with the portable tools, the machines may be taken to the job and much time and effort in transportation saved. Not infrequently such portable units are worked in combination, and with surprising economy as the result. In one automobile plant (and this instance is cited because of the possibility of adaptation in almost any other field) six electric drills bore six holes at a time in the wood blocks used for bracing the cars when packed for shipment. This work, formerly a rather tedious operation, is now performed by the portable electric tools, and with a speed almost unbelievable. Furthermore, the same portable machines, equipped with screw drivers or socket wrenches, secure the blocks in place nearly as fast as they can be produced.

When put in the hands of skilled operators, these new machines, with their sensitive switch control, fine balance and freedom from vibration, are well suited for even delicate operations. This characteristic makes them valuable in repair work on heavier units. The great variety of designs—pistol grips, breast plates, spade handles, capstan arms, etc., both simplify their manipulation and vastly increase their flexibility and field of usefulness.

No odd job seems beyond the capacity of the portable electric tool, and a great many customary manufacturing operations can be discharged by them with equal accuracy, greater speed, and at less cost. Such tools will drill, polish, grind, buff, saw, plane, mill, tap, ream, cut, screw, clean and brush. Their uses are legion, and their economy is great.

A Limit to Salvage Economy

MUCH has been said about waste elimination and the necessity for systematized salvage and reclamation. That advice was greatly needed and has doubtless done much to reduce needless expense. It should be remembered, however, there is a point beyond which salvage or reclamation become unprofitable. An ordinary pipe wrench, globe valve or grease cup, for instance, may be only slightly out of repair, and it seems a shame to discard the piece as useless. But calculate the cost of a workman's time in putting the piece back into shape against the cost of a new piece, and the results will frequently indicate the purchase of new equipment as the more economical way out. Even the best of workmen can easily spend two or three dollars' worth of time in taking a valve apart, repairing and reassembling it, whereas a new valve would probably cost no more, if as much.

Nails, bolts, bars, chisels, wood screws, nuts and other simple forms of equipment nearly always justify salvage effort or at least the consideration of reclamation costs. Doubtless, the annual waste in such small parts, due to careless handling, mislaying, unwise issuance, corrosion, etc., runs into the millions of dollars—much of which might be saved through increased attention and systematic organization. As for old and decrepit machinery, however, the cost of patching and repair frequently exceeds the cost of new equipment—with no possibility for increased efficiency or lasting investment.

It is a duty of management to instill into every employee the realization that waste, in whatever form, militates as much against themselves as the company, and that no individual, company or nation is rich enough to tolerate it.

The Paper Industry Annual Safety Contest

January Scores

41 Mills Made a "Ten-Strike"

PERFECT SCORES

	PARTICIPANT	NAME OF MILL	LOCATION
Group A	International Paper Co.	Otis	Chisholm, Me.
	Dill & Collins	Philadelphia	Pennsylvania
Group B	Falls Manufacturing Co.	Oconto Falls	Wisconsin
	Mead Fibre Co.	Kingsport	Tennessee
	Kimberly-Clark Co.	Kotex	Neenah, Wis.
	Strathmore Paper Co.	Number 1	Mittineague, Mass.
	Louis De Jonge Co.	Stapleton	Long Island, N. Y.
	American Writing Paper Co.	Beebe & Holbrook	Holyoke, Mass.
Group C	Marinette & Menominee Paper Co.	Menominee	Michigan
	The Gardner & Harvey Co.	Number 2	Middletown, O.
	International Paper Co.	Winnipiseogee	Franklin, N. H.
	Bird & Son, Inc.	Phillipsdale	Mass.
	The Northwest Paper Co.	Brainerd	Minnesota
	Provincial Paper Mills, Ltd.	Montrose Division	Thorold, Ontario
	American Writing Paper Co.	Holyoke	Mass.
	The Adams Bag Co.	Chagrin Falls	Ohio
	Robertson Paper Co.	Montville	Conn.
	The Gardner & Harvey Co.	Number 3	Middletown, O.
	Strathmore Paper Co.	Number 1	Woronoco, Mass.
	American Writing Paper Co.	Gill	Holyoke, Mass.
	American Writing Paper Co.	Nonotuck	Holyoke, Mass.
	American Writing Paper Co.	Parsons	Holyoke, Mass.
	American Writing Paper Co.	Albion	Holyoke, Mass.
	Bemis Bros. Bag Co.	Peoria	Illinois
	Kimberly-Clark Co.	Atlas	Appleton, Wis.
	International Paper Co.	Livermore	Chisholm, Me.
	Union Bag & Paper Corp.	Cheboygan Paper	Michigan
	American Writing Paper Co.	Dickinson	Holyoke, Mass.
	American Writing Paper Co.	Norman	Holyoke, Mass.
	U. S. Gypsum Co.	Oakfield	New York
	Kimberly-Clark Co.	Neenah	Wisconsin
	Union Bag & Paper Co.	Allen	Hudson Falls, N.Y.
	Strathmore Paper Co.	Number 2	Mittineague, Mass.
	American Writing Paper Co.	Mt. Tom	Holyoke, Mass.
	Union Bag & Paper Co.	Number 5	Hudson Falls, N.Y.
	International Paper Co.	Riley	Chisholm, Me.
	U. S. Gypsum Co.	Gypsum	Ohio
	Lincoln Pulp & Paper Co.	Lincoln	Merritton, Ont.
	International Paper Co.	Fall Mt.	Bellows Falls, Vt.
	Sorg-Ogleby-Smith Paper Co.	Smith	Middletown, O.
	U. S. Gypsum Co.	Lancaster	Ohio

IMPERFECT SCORES

GROUP A			GROUP B			GROUP C		
Key	Rank	Rate	Key	Rank	Rate	Key	Rank	Rate
A-25	3	.02	B-19	7	.01	C-37	34	.03
A-22	4	.02	B-14	8	.02	C-28	35	.04
A-26	5	.02	B-20	9	.04	C-15	36	.05
A- 3	6	.04	B-13	10	.06	C-52	37	.09
A-13	7	.08	B-25	11	.09	C-35	38	.15
A- 7	8	.08	B- 4	12	.10	C- 6	39	.16
A- 9	9	.12	B-29	13	.11	C-14	40	.17
A- 4	10	.13	B- 5	14	.11	C-40	41	.26
A-17	11	.14	B-24	15	.13	C-30	42	.56
A-11	12	.18	B-33	16	.15	C-41	43	.59
A-20	13	.18	B-27	17	.15	C-42	44	.72
A- 5	14	.20	B-28	18	.16	C-11	45	.78
A- 2	15	.20	B-22	19	.21	C-25	46	.83
A-19	16	.23	B-26	20	.23	C-23	47	.94
A-23	17	.25	B-31	21	.27	C-49	48	.95
A-18	18	.30	B- 6	22	.31	C-29	49	1.09
A-10	19	.31	B-34	23	.31	C-22	50	1.25
A-24	20	.53	B-15	24	.33	C-33	51	1.31
A- 8	21	.57	B- 2	25	.35	C-12	52	1.33
A- 1	22	.78	B- 7	26	.37	C-48	53	1.40
A-16	23	1.17	B-10	27	.41	C-26	54	1.66
A-15	24	1.65	B-12	28	.44	C-57	55	3.87
A-14	25	1.97	B-36	29	.52	C-17	56	18.80
A-21	26	4.87	B-17	30	.70			
			B-23	31	.79			
			B-18	32	1.05			
			B-30	33	1.18			
			B- 9	34	1.51			
			B- 8	35	3.76			
			B-35	36	10.03			

NASACO LOG

THE contest as a whole is starting out at a faster pace than in 1926. Allowing for the change in method of figuring the 78 mills not in first place, made a lower accident record than did the 46 mills of similar status during January 1926. As George writes (G. E. Burns) "if the race finishes anything like the way it is starting, the judges certainly will have their hands full when it comes to awarding the grand prize."

A Perfect Month

Just this much, boys. 119 mills in a six-month contest is the biggest thing that ever struck North American safety thinking. Watch the National Safety News, for April, also THE PAPER INDUSTRY for mills and their standings. Meanwhile, make this your slogan:

At least one perfect month in every mill.

Grand Rapids Conference

The regional conference at Grand Rapids, Mich., March 21-22 promises to be a lively and instructive one, with Augustus of Mead Paper and Pulp, Boyer of Interlake Paper and Pulp, and our good friend W. J. Peacock of Northern Mills presiding.

Canadian Contest Results

The Canadian Safety Contest which terminated six months' effort, December 31, 1926, was won and seconded by Spruce Falls, which came in first, and Laurentide, who won second place. These two mills, who made things hot in the States' contest last year, have the following record:

	No. of Accidents	Days Lost	Average No. Employees	Severity Rate
Spruce Falls	2	19	312	.040
Laurentide	14	158.5	1,099	.110

The prize was a trophy offered by the "Pulp and Paper Magazine of Canada," and bore the title, "The Safest Mill in Canada."

Bird & Son's Contest

Bird & Son have on a side contest with Hollingsworth & Vose Co., in which both firms are out for first honors.

Power Conference Notes

Second Mid-western Power Show in Chicago

ALTHOUGH there were hundreds of worthy exhibitors, who are not included in these pages, the fact that the New York Show was given so completely in our January issue, has led us to include principally those who did not exhibit in the New York Show, and also the idea of acquainting our readers, with some of the middle-west manufacturers who presented important showings of their equipment here.

The conference this year was characterized by a spirit of progress and development, and the indication that the next show will mark even greater progress in power and mechanical engineering was evident.

V. D. Simons' paper on The Use of Power in Pulp and Paper Mills lent an important note to the part played by the paper industry in the development of power usage in the industry. A partial list of exhibitors follows:

Allis-Chalmers Manufacturing Co., Milwaukee, Wis., showed as their major exhibit the enclosed, self-ventilating polyphase induction motor in operation. This motor is dirt proof, drip proof, and splash proof, with perfect ventilation accomplished by free circulation of air directed through and around windings and cores.

American Blower Company, Detroit, Mich., displayed their dry plate air filter, which is a constant effect system, in which the dirt is collected on flat intervening areas. The unloading operation is simple. There are no oils or greases to vaporize or harden.

Andrews-Bradshaw Co., Pittsburgh, Pa., showed a miniature working model of the Tracyfier which removes all moisture and foreign matter from steam by means of baffle plates before it leaves the boiler, assuring a continuous delivery of standard specification steam.

The Bartlett-Hayward Co., Baltimore, Md., exhibited a telescopic type of flexible coupling for jordan engines, and their standard model recently become popular for sectional drives, pulp grinders, pumps, fans, conveyors, etc.

The Bayer Company, St. Louis, Mo., showed soot blowers for horizontal water tube, and fire tube boilers, featuring the Bayer Chromite non-oxidizing and non-warpable, air cooled soot blower element.

Bethlehem Steel Company, Bethlehem, Pa., exhibited an operating model of the Bahl mechanical oil burning system, adaptable to any type of boiler, and a Bethlehem-weir turbo feed pump.

S. F. Bowser and Co., Inc., Fort Wayne, Ind., showed their new diskelectro filter for transformer oil, the first three sales of which equipment were made to paper mills. Oil storage systems, oil filters and lubrication equipment were also shown.

Buffalo Forge Company, Buffalo, N. Y., demonstrated effectiveness of the new Buffalo blower in a working exhibit by having a light rubber ball suspended high by air from the exhaust.

H. W. Caldwell & Son, Co., Chicago, Ill., as part of the Link-Belt exhibit showed the Caldwell vertical-capstan electric car spotter, by the use of which one man can do the work of two in one-tenth the time.

Cokall Stoker Corporation, Chicago, Ill., had a popular exhibit showing the new Pulverzone, Cokall Stoker for return tubular and water tube boilers from 50 up to 2000 h.p. It has three coal burning methods combined in one; pulverized coal burning, spread method (light and continuous) and coking method.

Cochrane Corporation, Philadelphia, exhibited the Cochrane, conical strainerless filter with single control valves, rate of flow controller, and coagulent feeder, Cochrane deaerating heater, high and low pressure steam traps, steam and oil separators, flow meters, etc., were also exhibited.

Connery & Company, Inc., Philadelphia, exhibited the improved expansion stiffener for application in the construction of breechings, uptakes, and air ducts.

Crandall Packing Co., Palmyra, N. Y., displayed their various lines of ring coil and spiral packing for high and low pressures, featuring their waterproof hydraulic flax packing.

Crane Packing Co., Chicago, Ill., featured their "John Crane" metallic packing, which they state is a new method of packing condensers at less cost than corset lace or fiber bushings.

Combustion Engineering Corporation, New York City, exhibited various parts of the Lopulco system, and animated pictures of the pulverized fuel burner, and the steam generator in action.

G. M. Davis Regulator Co., Chicago, Ill., featured their new six-inch to 48-inch wing disc non-return valve for bleeder lines, gas booster line pressure reducing valves, automatic stop and check valves, steam traps, float valves, and float boxes.

Detroit Stoker Company, Detroit, Mich., featured actual size model of their multiple retort stoker, also exhibiting a single retort stoker, and a number of views of installations in paper mills.

Diamond Power Specialty Co., Detroit, Mich., exhibited the diamond "Valv-in-head" soot blower, together with the Diamond Dialoy soot blower elements.

Dodge Manufacturing Corp., Mishawaka, Ind., showed their line of Dodge Timken bearing transmission and belt conveyor equipment, traveling automatic tripper, and belt conveyor for coal and other abrasives.

Ehret Magnesia Manufacturing Co., Valley Forge, Pa., exhibited samples of Ehret's 85% magnesia pipe coverings, blocks, lagging and cement; also Ehret's high temperature insulations for super-heat work. The chemical process of manufacture of their products was also demonstrated.

Elgin National Watch Co., Elgin, Ill., exhibited the Elgin chronometric tachometer for paper mill use.

Elliott Company, Pittsburgh, Pa., had an actual exhibit of a Kerr 100 kw. geared turbine generator.

Fairbanks Morse & Co., Chicago, Ill., made an advance showing of their new Diesel engine generating set. Their regular line of ball bearing centrifugal pumps and motors as well as reciprocating pumps was also shown.

Foster Engineering Co., Newark, N. J., exhibited pressure regulators, pump governors and the Foster sight flow box.

The General Electric Co., Schenectady, N. Y., had an attractive exhibit showing electric flow meters, centrifugal air compressors, turbines, motors, and control equipment.

Graver Corporation, East Chicago, Ind., featured an actual size Zeolite softener and colored illustrations of hot and cold lime soda softeners.

Illinois Engineering Co., Chicago, Ill., featured the new Illinois Eclipse Steam Trap and their regular line of back pressure, relief, and balanced valves.

Ingersoll-Rand Company, New York City, N. Y., displayed a Cameron 5-inch six stage high pressure boiler feed pump driven by a Terry steam turbine, and other types of Cameron pumps. There was also an illuminated display of steam distribution in a single pass Ingersoll-Rand condenser.

Irving Iron Works Co., Long Island City, N. Y., exhibited their Irving Vizabledg Safstep providing light and ventilation for use in pulp and paper mills, and power plants as armoring for concrete floors, for walkways, platforms, and galleries, beside the upper parts of machinery.

Jenkins Bros., Bridgeport, Conn., showed their complete line of valves, the Jenkins Disc, and Jenkins packing.

Marco Nordstrom Valve Co., Chicago, Ill., featured the Marco-Nordstrom lubricated plug valve.

W. H. Nicholson & Company, Wilkes-Barre, Pa., showed the Nicholson flexible coupling, piston operated steam trap, with a new hand blow-off feature, three and four way valves, and a weight operated steam trap.

The Permutit Company, New York City, displayed a miniature model of Zeolite water softener as used in pulp and paper mills, with a number of pictures of installations.

Plibrico Jointless Firebrick Co., Chicago, Ill., showed their jointless furnace lining, and the new flexo-anchor.

Pittsburgh Piping & Equipment Co., Pittsburgh, Pa., gave their piping equipment for use in paper mills, and industrial plants of every description.

The Wm. Powell Company, Cincinnati, O., exhibited their "White Star" sectional, horizontal and angle check valves, with renewable seats and discs.

Power Plant Specialty Company, Chicago, Ill., exhibited the Vater two-stage separator for protection of engines and other units from slugs of water, and purification of exhaust steam from oil and moisture for use where low pressure live steam is ordinarily used.

Power Specialty Co., New York City, had as their main feature a cross-section of Foster composite furnace wall, and the aero pulverizer, besides the Foster steam superheater with extended surface.

Quigley Furnace Specialties Co., Inc., New York City, made an exhibition of "Hytempite," a material for bonding firebrick and patch in furnace linings.

Ramsey Chain Co., Inc., Albany, N. Y., exhibited the Ramsey silent chain drives of different sizes on running cogs.

Reed Air Filter Company, Louisville, Ky., featured the Reed Streamline Air Filter, which is an automatic self-cleaning air purifier, specially adapted for power and industrial plants.

Republic Flow Meters Co., Chicago, Ill., exhibited water meters, turbine meters, boiler meters, gas producer meters, electric flow meters, and panel boards set up complete with charts.

Riley Stoker Corporation, Worcester, Mass., featured the Riley Atrita unit coal pulverizer as well as a new type poppet valve for operating the Jones stokers for the elimination of steam leakage.

The Rowan Controller Co., Baltimore, Md., exhibited direct current automatic motor starters for A.C. motors, and other equipment.

Sauerman Bros., Chicago, Ill., had a complete miniature coal yard with working model of "Crescent" power drag scraper.

B. F. Sturtevant Company, Boston, Mass., showed a new type of induced draft fan of high efficiency for straight line installation in a vertical gas flow; a tubular air preheater, and a propellor forced draft type fan containing a new type of impeller blower with curved floats, making it practically self-cleaning; for protection against corrosion, tubes are lead coated.

The Terry Steam Turbine Co., Hartford, Conn., featured a 210 h. p. turbine non-condensing, designed to drive boiler feed pump equipment. Their 500 kw. motor designed for 200 lbs. steam pressure and 25 lbs. back pressure is an exact duplicate of six machines in St. Lawrence Paper Mills in Three Rivers, Canada.

Vulcan Soot Cleaner Co., Du Bois, Pa., exhibited Vulcan soot cleaners for Walsh & Weidner H.W.T. Boilers, and featured diagonal blowing.

Walworth Company, Boston, Mass., exhibited valves from the smallest type up to a sixteen inch size gate valve. They also showed fittings, and demonstrated Kewanee unions.

Wheeler Condenser & Engineering Company, Carteret, N. J., presented a single pass condenser with a steam jet air pump.

Williams Patent Crusher and Pulverizer Company, St. Louis, Mo., showed an improved ring coal crusher.

Worthington Pump Machinery Corporation, New York City, featured pumping machinery a multistage hydraulic boiler feed pump, besides an "Axiflow" sump pump, and two vertical, and two horizontal single stage compressors.

Wright-Austin Co., Chicago, Ill., presented steam saving equipment in the form of steam, oil, and air separators, steam traps, safety alarm water columns, exhaust heads, and feed water regulators.

Yarnall-Waring Co., Philadelphia, gave a showing of blow-off valves and feed water meters, spray nozzles, and hydraulic valves.

Due to a large increase in business in Buffalo and vicinity, The Brown Instrument Co. has opened a Buffalo branch at 794 Ellicott Square Bldg., with D. C. Mayne as district manager. L. C. Wilson has been appointed to handle sales and engineering service for the new company in the Pittsburgh territory.

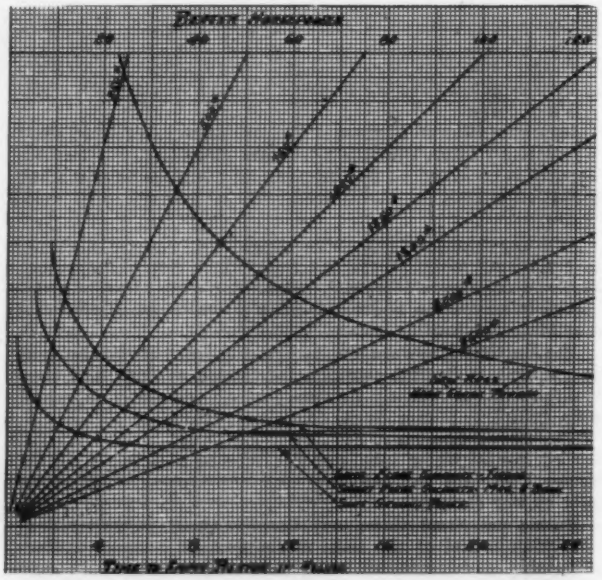
Power Requirements of Paper Mill Machinery[1]

By S. A. STAEGE[2] and C. U. SMITH[3]

THIS paper is in continuation of the work undertaken last year by the Heat, Light and Power Committee of presenting information on the power requirements of various machines as used in the industry for the use and benefit of the membership and for the records of the Association.

Not only is the power data being compiled intended for the guidance of those having to make applications of motors to various machines and to aid them in the selection of the proper sizes of equipment, but one of the major objects of this work is to point out improvements in present over past practice, to indicate ways in which these improvements have been effected, and to point out lines along which improvement can be expected in the future.

When we contemplate the vast amount of power used in the paper industry, and when we consider that more than three million horsepower of energy is expended in the pulp and



Horsepower Requirements of Beaters

(Based on Cutting Speed of 1,500 Feet per Minute)

To Read Power—Start with beating time in hours and proceed vertically to intersection with curve showing kind of stock, then proceed horizontally to intersection with radial line showing beater capacity. From this point proceed vertically to upper scale and read hp. required.

paper mills of the United States and Canada, are we not led to speculate as to whether so much power is really necessary and whether perhaps a few million dollars each year, taken from the revenues of mill operation and expended for power, should not go into profit? Such indeed is the case. There are opportunities for reducing the power consumption all through the mill.

The Paper Machine

The paper machine is an outstanding example of marked economies in power consumption that have been effected in the past few years and much remains to be done. Improved bearings for table and felt rolls have gone into universal use. Calender bearings have been so improved in design and construction that in best modern practice today, a calender stack requires no more than half or one-third of the power necessary for a similar size and speed stack only a few years ago, and in the best present day practice the paper machine dryers take no more than one-third of the power found necessary only four or five years ago.

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[1]Presented at annual meeting of Technical Association of the Pulp and Paper Industry, February 21 to 24, 1927, at New York City.

[2]Member TAPPI; Industrial Engineer, Westinghouse Elect. & Mfg. Co.

[3]General Engineering Department, Westinghouse Electric & Mfg. Co.

Improvements have also been made in other parts of the machine which have had their beneficial effect.

Probably the largest single item in reducing the power requirements of the paper machine has been the entire elimination of the old style mechanical drive. The more direct application of power with sectional electric drive with the elimination of inefficient mechanical transmission machinery, frequently effects savings in power of from 25 to 50 per cent.

Further reductions in the power required for the paper machine itself can be reasonably made, probably to the extent of at least an additional 50 per cent. Still further improvements in bearings can be made, especially where heavy loads are carried or where temperature is a factor, in cases such as calenders, dryers and presses, by the use of sleeve bearings of more adequate design or by the use of antifriction bearings. Suction boxes designed to reduce friction, or their equivalent arranged to rotate with the wire, would substantially reduce the power required at the forming end of the machine.

Four or five years ago, the power required for news machines with sectional electric drive averaged about 0.25 kw. per inch width per 100 ft. speed, ranging from 0.19 to 0.30 kw. This is the electrical input to the motor. Today, the best news machine practice is approximately 0.15 kw.

Here is a reduction in power of 40 per cent on the paper machine proper. This came following the advent of electrical sectional drive which made possible an analysis of load conditions.

When the machine builders know the situation and are made aware of the fact that their customers are interested in saving power, they have shown a disposition to do their part in improving design and they have accomplished notable achievements. There are more worlds to conquer, however, and I want to call upon the machinery manufacturers and their design engineers to stimulate their imagination and put into execution improvements in design and construction which will set new landmarks in progress and save hundreds of thousands of dollars annually for the mills by the elimination of waste in power.

POWER REQUIREMENTS OF JORDANS

Item No.	Jordan Manufacturer	Size or Type	Kind of Stock	Tons per 24 hrs.	RPM of Jordan	Hp. Installed	Average hp. Required.
1.	Noble & Wood Co.	Mammoth, Jr.	Filler	— —	285	75	70
2.	Noble & Wood Co.	Mammoth, Jr.	Filler	— —	285	75	70
3.	Noble & Wood Co.	Mammoth, Jr.	Liner	— —	285	75	83
4.	Appleton Mach. Co.	.....	Kraft	15.	400	250	286
5.	Appleton Mach. Co.	.....	Kraft	8.	450	150	151
6.	Shartle Bros. Mach. Co.	Miami No. 2	Old Papers	— —	435	100	115
7.	Shartle Bros. Mach. Co.	Miami No. 2	Old Papers	— —	435	100	101
8.	Black-Clawson Co.	No. 2	Top Liner	22.	400	100	130
9.	Noble & Wood Co.	Bull-Dog	BackLiner	36.	400	100	125
10.	Noble & Wood Co.	Bull-Dog	Top Liner	36.	400	125	140
11.	Shartle Bros. Mach. Co.	Miami No. 2	Kraft	— —	385	125	105
12.	E. D. Jones & Sons Co.	Majestic	Rag	— —	315	150	172
13.	E. D. Jones & Sons Co.	Majestic	Bond	— —	315	150	147
14.	Appleton Mach. Co.	No. 2	Bond	— —	385	150	131
15.	E. D. Jones & Sons, Co.	Majestic	Sulphite	— —	375	150	153
16.	Noble & Wood Co.	Mammoth, Jr.	Old News	— —	285	75	66
17.	Noble & Wood Co.	Mammoth, Jr.	Kraft	— —	285	75	100
18.	E. D. Jones & Sons Co.	Standard	Manila	— —	425	75	52
19.	Shartle Bros. Mach. Co.	Miami No. 2	Filler	— —	435	150	130
20.	Shartle Bros. Mach. Co.	Miami No. 2	Liner	— —	435	150	108
21.	Shartle Bros. Mach. Co.	Miami No. 2	Liner	22.	385	125	128
22.	Shartle Bros. Mach. Co.	Miami No. 2	Filler	24.	385	125	87
23.	Appleton Mach. Co.	No. 2	Rag	8.5	385	150	127
24.	Appleton Mach. Co.	No. 2	Rag & Sulphite	9.5	385	150	131
25.	Appleton Mach. Co.	No. 2	Rag & Sulphite	8.0	385	150	134
26.	Appleton Mach. Co.	No. 2	Rag & Sulphite	8.0	385	150	134
27.	E. D. Jones & Sons Co.	Imperial	Book	22.0	400	150	161
28.	J. H. Horne & Son Co.	.....	News	— —	368	75	65
29.	E. D. Jones & Sons Co.	Majestic	News	— —	315	150	115
30.	E. D. Jones & Sons Co.	Majestic	Book	— —	375	150	153

A New Table

Last year there was presented a table showing the power input to sectional electrically driven fourdrinier paper machines. This table from power readings of numerous machines gave figures on some of the oldest and some of the latest machines as of that date, with some of high power consumption and some showing very economical performance. Since that time a number of new machines have been put into service and a new table is presented at this time showing some of the low power machines in the industry today. These figures should serve as marks to aim for and as a stimulus upon which to try to improve.

Beaters

A great variety of conditions obtain with respect to the power requirements of beaters. The kind of stock, the length of time of beating, the size of beater and the peripheral speed of the roll, all affect the power consumption as well as do details of design of the beater itself.

A chart is here presented based upon extensive investigation which is intended to show the horsepower requirements for the various conditions indicated. This is based upon the conventional practice of the past and does not necessarily cover adequately some of the latest practice and developments in improved circulation, high cutting speed or exceptionally large size or special design of beaters.

The energy lost in bearing friction in the beater and drive will probably vary from 10 to 25 per cent of the total power output of the driving unit, or the total power absorbed by the beater and drive.

Many beaters in every day use are in such a condition mechanically that great improvement could be made, particularly in bearing design and lubrication which would reduce the power consumption to a very noticeable degree and it is to be hoped that an interest not heretofore exhibited will be taken to the end that unnecessary losses may be greatly reduced.

Jordans

On the subject of jordan drives, the power requirements are subject to great variation depending upon the kind of

POWER INPUT TO SECTIONAL ELECTRICALLY DRIVEN FOURDRINIER PAPER MACHINES

KW. Per Inch Width Per 100 Ft Per Min. Paper Speed

Item No.	Width in Inches	Kind of Paper	Speed in f.p.m.	Couch	1st Press	2nd Press	3rd Press	1st Dryer Section	1st Dryer Per Roll	2nd Dryer Section	2nd Dryer Per Roll	1st Calender	2nd Calender	Breaker Roll	Reel	Gen. Output	Remarks
1	234	News	850	0.032	0.015	0.020	0.020	0.021	0.0009	0.021	0.0009	0.029	....	.....	.....	0.154	Cal. includes reel.
2	234	News	825	0.041	0.023	0.018	0.019	0.017	0.0008	0.017	0.0008	0.023	....	.....	0.0062	0.166	
3	234	News	670	0.029	0.017	0.013	0.013	0.019	0.0009	0.013	0.0006	0.026	....	.....	.....	0.129	Cal. includes reel.
4	164	News	1026	0.038	0.011	0.009	0.014	0.026	0.0011	0.042	0.0018	0.015	....	.....	0.0046	0.164	
5	234	News	730	0.057	0.021	0.013	0.015	0.015	0.0008	0.016	0.0009	0.028	....	.....	.....	0.166	Cal. includes reel.
6	234	News	750	0.033	0.020	0.015	0.016	0.017	0.0009	0.017	0.0009	0.027	....	.....	.....	0.145	Cal. includes reel.
7	234	News	765	0.035	0.021	0.016	0.017	0.015	0.0009	0.020	0.0012	0.020	....	.....	0.0057	0.156	
8	234	News	765	0.023	0.021	0.016	0.016	0.013	0.0007	0.012	0.0007	0.012	....	.....	0.0057	0.146	
9	234	News	790	0.044	0.022	0.018	0.021	0.015	0.0009	0.012	0.0007	0.022	....	.....	0.0061	0.160	
10	234	News	760	0.040	0.022	0.018	0.021	0.011	0.0006	0.015	0.0009	0.022	....	.....	0.0063	0.156	
11	152	Book	295	0.054	0.017	0.019	0.019	0.029	0.0007	....	.....	0.012	0.019	0.0043	0.0054	0.139	
12	200	Book	250	0.019	0.010	0.011	0.009	0.011	0.0007	0.005	0.0004	0.017	0.019	0.0024	0.0090	0.118	
13	200	Book	308	0.019	0.012	0.012	0.011	0.014	0.0009	0.009	0.0007	0.010	0.030	0.0024	0.0065	0.125	
14	196	Book	281	0.020	0.016	0.013	0.009	0.020	0.0007	....	.....	0.012	0.015	0.0037	0.0037	0.112	
15	152	Book	275	0.055	0.020	0.020	0.020	0.024	0.0010	....	.....	0.014	0.027	0.0047	0.0060	0.146	
16	136	Parchment	335	0.035	0.026	0.021	0.018	0.032	0.0009	....	.....	0.035	....	.....	.....	0.169	Cal. includes reel.
17	116	Bond	400	0.033	0.017	0.009	0.007	0.012	0.0007	0.007	0.0004	0.005	0.014	.....	0.0130	0.126	
18	174	Kraft	207	0.029	0.018	0.012	0.015	0.024	0.0012	0.014	0.0007	0.021	....	.....	0.0100	0.143	
19	174	Kraft	635	0.031	0.019	0.010	0.011	0.030	0.0015	0.022	0.0011	0.009	....	.....	0.0060	0.142	

stock, the nature of the work to be done upon it and the individual ideas of the operator. A table is presented showing a few more or less typical cases but no effort is being made at this time to go further than that.

Beginning Being Made

As indicated a year ago, in the presentation of the paper at that time on this same subject, a beginning is being made but only a beginning of the very extensive work which should be done along the lines which the Committee has undertaken and the material presented in this paper, while very incomplete, it is hoped will prompt suggestions and constructive criticisms and the contribution of new material so that our fund of knowledge on the subject of power requirements of pulp and paper mill machinery will be constantly increased and so that the latest, best and most advanced practice may be made available.

Report of Committee on Sulphate Pulp

By R. H. STEVENS, Chairman

THE work of this committee has necessarily been subject to the usual limitations of such work when the members are widely scattered and dependent upon correspondence for interchange of ideas. In the beginning the chairman requested each of the others to suggest such items as he thought should be included in this year's program. From these suggestions the following were selected:

1—Question: "What constitutes good salt cake? What is the special detriment of each of the impurities commonly found and what should be the limits allowed for each?"

2—Question: "What is the best method of washing sulphate pulp? What are the losses of chemicals in the usual methods of washing?"

3—Question: "What are the usual losses of alkali in the recovery room? Where do these losses occur?"

4—Question: "What is a suitable standard of quality for sulphate pulp? What tests should be used for it?"

In attempting to study these questions the committee decided to adopt Mr. Baker's suggestion of last year and send out questionnaires under the Service to Members plan. The first two items have been treated in this way and the results analyzed. A questionnaire covering the third has been prepared, but not yet sent out. The fourth item has not yet been attacked in dead earnest.

Still another matter was suggested at the convention last spring, viz., the odor nuisance and possible means for its abatement. This is too large a subject to be solved in one year, but it has received some consideration.

Quality of Salt Cake

The matter of salt cake quality appeared to interest the TAPPI members and a good set of replies was received. The weight of opinion appeared to be that good salt cake should contain at least 95 per cent Na_2SO_4. It is poor economy to use low grade salt cake regardless of the price. For as the Na_2SO_4 content falls below 95 per cent, the reduction is disproportionately lowered and the entire system becomes clogged with impurities. It might even prove profitable sometimes to pay a premium for extra pure salt cake. For example if a mill is paying $20 a ton for 95 per cent salt cake and consuming 400 pounds per ton of pulp and could reduce its consumption to 380 pounds by using 96 per cent salt cake then if the latter costs anything less than $21 a ton it would prove cheaper than the former.

Sodium Chromate—Opinion was divided as to the objectionableness of the various impurities. Sodium chromate seemed most decidedly taboo, the vote standing 5 to 1 for total exclusion in so far as possible. The objections were based on its effect in raising the melting point of the smelt and consequent deterioration of the smelter. One reply stated, "Yellow cake always contains 5 to 10 per cent of moisture while white cake seldom exceeds 1 per cent." Another thought the reduced chromate forms a gelatinous precipitate in the green liquor which slows up the settling of the sludge. Only one was willing to say a good word for chromate and the best he could say was, "not harmful if under 0.5 per cent."

Magnesia—Next to chromates, the largest number turned "thumbs down" on magnesia because it forms a slimy hydroxide that hinders the settling and washing of the sludge. Another objection was that it causes deposits in the furnace. Magnesia was not entirely ostracized, however, as one man declared its sulphate would be reduced to the sulphide and the latter would react like Na_2S in the digester. The average amount deemed permissible when allowed at all was 0.5 per cent.

Iron—After magnesia, iron proved the most widely objectionable. The maximum thought tolerable was 0.6 per cent, but with alumina and lime included. The average of the limits proposed was 0.38 per cent. The grounds for objection, aside from taking the place of the desired Na_2SO_4, were: "May give trouble in the dissolving tanks by giving false Baumé reading"; "forms gelatinous precipitate which interferes with the settling of the sludge"; "colors the pulp due to formation of double sulphide with sodium"; "may cause deposits in the furnace."

Insoluble Matter—Insoluble matter was objected to by a bare majority, the extreme limit suggested being 3.0 per cent with as little as one-tenth as much objected to by one individual. The average of the limits suggested was 1.1 per cent. The main objections raised against this impurity, which was considered as mainly silica, were: retarded settling of lime sludge; formation of deposits in furnace; formation of inert sodium silicate; increased loss of Na_2O in sludge on account of absorption by colloidal SiO_2, or possibly formation of insoluble double silicate of sodium and calcium.

Free Acid—Opinion was equally divided as to the undesirability of free acid, salt and lime. Several were of the opinion that a certain amount of free acid might prove beneficial, particularly if an equivalent amount of salt were also present. The idea seemed to be that in buying on a guaranteed Na_2SO_4 content the free acid and salt would be deducted in computing the analysis and yet would react in the smelter to form additional Na_2SO_4, which would thus be obtained without cost. Objections to free acid were chiefly based on the liberation of H_2S by interaction with sulphides in the black ash, or of HCl by interaction with chlorides. Both these gases exert a powerful corrosive action on iron equipment, besides being a menace to the health of the operatives. The maximum limit suggested was 2.5 per cent; the minimum 1.0 per cent; average, 1.63 per cent, calculated as H_2SO_4.

Salt—Salt was objected to on account of its corrosive action, or that of the HCl liberated from it if enough free acid were present. Also because of its inertness in cooking. It was also said to cause trouble in washing pulp by "salting out" soaps, etc. The limits suggested ranged from 0.75 to 3.0 per cent with 1.44 per cent as the average.

Lime—Lime was found objectionable mainly because of its supposed action on furnace linings and evaporator tubes. Mainly, however, it was deemed inert and to be shunned on that account rather than because of any positive detriment. The limits were almost unanimous at 1 per cent as $CaSO_4$. One was willing to allow 2.25 per cent provided other impurities were low.

Moisture—The only other impurity suggested as worth special mention was moisture. This besides replacing the desired sodium sulphate causes caking of the product, thereby making it more difficult to mix with the black ash. The limits suggested ranged around 2 per cent with one as high as 2.5 per cent, and another as low as 0.5 per cent. One declared: "A small moisture content is desirable," but did not explain whether he meant the salt cake should not be anhydrous or that whatever the moisture content might be it should be small.

Fineness—The degree of fineness aroused considerable discussion. Most agreed that too fine grinding means loss in handling and by volatilization or by carrying away with the draft. On the other hand coarse lumpy salt cake does not mix well with the ash. "The size of a small pea" was the favorite answer, which probably means a particle with diameter from 4 to 6 millimeters, or about 1/5 to 1/4 inch. Where salt cake is dissolved in the black liquor, however, it was thought an-

[1]Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, February 21 to 24, 1927, at New York City.

advantage to have it pulverized as finely as possible. One contributor stated the finely ground salt cake is the purest and substantiated his statement by giving analyses of two samples differing by passing through 20 mesh screen, or being retained by it. The finer contained 91.79 per cent Na_2So_4 while the coarser had only 86.45 per cent. Another participant differentiated between two classes of salt cake, saying, "that from hand fired furnaces can be bigger in size and no trouble will be experienced. Salt cake from mechanical furnaces is harder to melt, owing to the nature of manufacture."

After due consideration of the above the committee suggests, tentatively, that the following be considered a suitable definition of salt cake satisfactory for use in the manufacture of sulphate pulp:

Analysis	%
Moisture	0.5 to 1.0
Free Acid (H_2SO_4)	1.0 to 2.0
Salt (NaCl)	1.0 to 2.5
Iron (Fe_2O_3)	0.2 to 0.4
Lime ($CaSO_4$)	0.5 to 1.0
Magnesia ($MgSO_4$)	0.0 to 0.5
Chromate (Na_2CrO_4)	0.0 to 0.5
Sodium Sulphate at least	95%

The lower limits are suggested, not as being an amount that is beneficial, but rather to show what can be expected in a real good salt cake.

Where the salt cake is to be mixed with the black ash and fired into the furnace it is suggested that 60 per cent should pass through a screen having ¼-inch openings.

Effects of Impurities Should Be Studied

The committee suggests further that the members of the Association who are engaged in the manufacture of sulphate pulp be invited to consider carefully the effect of each of the impurities mentioned when present in excessive amounts and to report to the committee the results of any observations along this line. Also that such members be invited to observe the effect of particle size on the recovery operation and to communicate these and other observations which might prove of value to the committee to the secretary of the Association for the use of the committee in further study of this subject.

Washing Sulphate Pulp

The matter of washing sulphate pulp attracted even more attention than quality of salt cake. Three methods of washing are in vogue: one, the old open pan system, two, the more usual diffusion process, and three, the newer suction filter method. The data collected by the committee make possible a very interesting comparison of these different types of equipment as well as of the varying degrees of efficiency obtained in different mills using the same process.

Suction Filters—Three-fourths of the replies dealt with diffuser washing. Only one-tenth were using the open pans and only four replies dealt with suction filters. Of these four one reported only what he had seen or heard without giving any detailed information. Another told of experience or observation in several mills. While his replies were in the main definite and valuable it was thought best to consider only the remaining two bona fide operating reports. These two showed considerable difference in operating efficiency. Thus:

	A	B
Size of filter	6 ft. wide x 6 ft. diam.	10 ft. wide x 6 ft. diam.
Pulp washed per sq. ft. per min., pounds	0.294	0.184
Consistency of pulp to filter, %	2½ to 3	1½
Thickness of cake on filter, in.	1 to 1¾	1½
Vacuum, inches	8 to 12	4 to 16
Consistency of pulp sheet, %	20	22
Speed of filter, r.p.m.	0.63	1
Wash water: Gal. per minute	91	60
Gals. per sq. ft.	0.587	0.215
Gals. per ton of pulp	525	2000
Dilution: Water per lb. pulp, lb.	2.14	5.84
Bé of liquor from digesters	16°	18¼°
Bé of liquor to evaporators	12°	11¼°
Alkali left in pulp (salt cake per ton), lb.	73	80

Conclusions—Judging by these two cases only it would appear that greater efficiency is obtained by feeding pulp at high consistency, operating at low peripheral speed and using a rapid flow of wash water. Both were using hot water (150 degrees F.) and both reported no weak liquor going to sewer. Both were using fir wood, with some hemlock in the case of A, and some tamarack in B's case. The latter said his wood was "slightly resinous," which fact undoubtedly has considerable bearing on the ease of washing. It is well known that while sulphate pulp from non-resinous woods can be washed readily enough on suction filters that from very resinous woods, such as southern pine, has never yet, to the writer's knowledge, been washed successfully on this type of equipment. The soap formed from the resins causes excessive foaming. The latter either breaks the vacuum or else causes terrific loss of alkali through foaming through the equipment into the sewer.

Open Pan—All of those using open pan washing were operating on pine. They reported from 300 to 4,875 gallons of wash water per ton of pulp. Presumably the "300" is a typographical error. It would seem more reasonable to expect 3,000 gallons since the dilution of black liquor is from 18 degrees down to 10½ degrees Baumé. This mill admitted losing 0.5 per cent of soda run direct to the sewer as black liquor. If this means Na_2O then the amount of alkali "ditched" amounted to 300 pounds of salt cake per ton of pulp. The washed pulp was found to contain 0.2 per cent of alkali, or 10 pounds of salt cake per ton.

Diffuser—Where diffusers are employed it appears customary for these to have a capacity of 10 to 15 per cent greater than the digesters. The sizes ranged from 1,319 cubic feet to 2,712; average 1,817 or around 3½ tons of pulp. The washing time varied around 9 hours, being variously reported, e.g., "6 to 8 hours" or "8 to 12 hours." Two-thirds of the mills were using a depth of stock in the diffuser of 15 feet or more. Three used as much as 18 feet; only two as little as 10 feet. Relatively low water pressures appeared to be the rule. Only four were using more than 25 pounds water pressure at the top while an equal number used less than 20 pounds. The lowest pressure reported was 12 pounds; highest 65 pounds. Unfortunately the question whether or not two or more diffusers were being washed in series was not included in the inquiry. The height to which the liquor is discharged was asked for, however, and a bare majority said the discharge was above the top of the diffuser. Obviously only these could use series washing. The one using the highest water pressure discharged the liquor above the top of the diffuser, but allowed it to go to a tank before being pumped to another diffuser.

Estimation of the Soda Remaining in the Pulp

The advantage gained by increasing the water pressure appeared to be shorter washing time. There seemed to be no direct relationship between pressure and amount of alkali left in the pulp. On the contrary the mill using the greatest water pressure made the poorest showing in this regard. This is explainable, however, on the ground of more accurate determination. This brings up the question how the amount of alkali left in the washed pulp should be estimated. Obviously any method which omits incineration of the fiber and examination of the ash is inadequate. Yet most of the mills are contenting themselves with a simple titration of a water extract of the sample, or even of the water squeezed out of the sample, and on finding only 2 or 3 pounds Na_2O per ton of pulp are "kidding themselves" about the efficiency of their washing methods. This is no less true of those using open wash pans and suction filters and renders useless any attempt to compare these methods in this particular. The committee feels that this matter of accurate determination of the amount of alkali left in the pulp might very properly be included in next year's program. To this end it is suggested that all members of the Association actively engaged in the manufacture of sulphate pulp be invited to study this point and communicate their suggestions to the Secretary for the use of the committee.

Waste of Weak Liquor to Sewer

Another important source of loss of alkali in pulp washing is the weak liquor allowed to run to the sewer. Only two of the replies made any attempt to deal with this part of the inquiry and both stated no weak liquor was allowed to go to the sewer. The same reply was made by those using suction filters. Unfortunately the committee failed to include losses from the wet room in its questionnaire. It often happens

that "pockets" of unwashed, or insufficiently washed pulp occur inside a diffuser and on dumping this pulp is mixed with the rest and in its passage over the screens and wet machines or pulp thickeners is more or less completely freed from this alkali. The wet room effluent is so voluminous, however, that it is no easy task to measure and sample it, or to determine accurately the amount of alkali in a proper sample. In one instance where an accurate check was made of the amount of alkali in the black liquor coming from the diffusers over a period of one week it was found that 89.2 per cent of the alkali charged into the digesters was recovered at this point. The total recovery in the complete cycle, i. e., back to the digesters again was 78.6 per cent. Thus one-half the entire loss of alkali occurred during the cooking, blowing and washing of the pulp. This is probably a fairly representative case.

Fiber Losses

The question of fiber loss was raised only in regard to that going to the evaporators. The answers ranged from an indefinite "little" to as high as 50 pounds per ton of pulp washed. The majority of the mills do not screen their black liquor. This is true for all classes of washing equipment.

Dilution of the Black Liquor

The amount of dilution of the black liquor appears to be less when the diffusion washing is practiced than with either of the other methods. The average for the diffusers is from 13.2° down to 10.25° Bé, for the open pans from 15° to 8.5° Bé the former being the density of the liquor coming from the digesters in each case. The comparison with the suction filters is hardly fair in view of the fact that only two replies including this point were received. Expressed as pounds of water added to the black liquor per pound of pulp washed the record is as follows:

	Maximum	Minimum	Average
Suction filters (2 only)	5.8	2.2	4.0
Diffusers	13	1.5	3.4
Open pans	14	9¼	11.6

The amount of wash water reported used per ton of pulp was:

	Maximum gal.	Minimum gal.	Average gal.
Suction filters	2,000	525	1,262
Diffusers	5,000	880	2,927
Open pans	4,875	3,000	3,437

Use of Hot Water

Hot water is commonly employed, the average temperature being 136°F. Only two mills used cold water. One of these was equipped with diffusers; the other with open pans. The water is usually heated indirectly by being used in a condenser either on the digester blow line (or relief line), vacuum evaporators, turbine exhaust, etc., or in cooling the air nozzles in the smelters. In only one instance was condensate from any of the multiple effects after the first employed for washing pulp. In this instance the reply failed to indicate whether or not any odor was observed in the washed pulp which might be attributed to the evaporator condensate.

Comparison As to Space, Power and Labor

An interesting comparison has been established as to building space, power and men per shift required by the different methods. Thus for 100 tons per 24 hours:

	Diffusers	Filters	Open pans (Only one reply considered)
Building space, sq. ft.			
Maximum	5,236	2,400	3,600
Minimum	2,100	1,500	
Average	3,700	1,850	
Power, h.p.			
Maximum	200	160	100
Minimum	40	100	
Average	87	130	
Men per shift,			
Maximum	4	1	3
Minimum	2	1	
Average	3	1	

Apparently the suction filters require less building space and fewer men per shift, but the diffusers are more economical of power.

Wood Species

The following wood species are represented: pine, jack pine, spruce, hemlock, balsam, fir and tamarack. It does not appear that the tree species has any influence on the other points except possibly on the amount of wash water required. The mills using fir report the lowest number of gallons per ton of pulp and those using pine the highest. Whether this is due to differences in some characteristic of the pulp, such as freeness, or to purely local conditions the committee is not in a position to determine.

Recovery Room Losses

The third item in the committee's program, viz. recovery room losses, has been covered in a questionnaire which is now ready and will be mailed out shortly. All members of the Association having to do with the manufacture of sulphate pulp are urged to participate in it.

Thus three items of our program deal with the purity and conservation of the chemicals used in the process of manufacture. The fourth item deals with the product and its standardization.

We are all accustomed to judge pulp quality in some way or other. We speak of "hard" pulp and "soft" pulp, but these terms have no quantitative meaning. How hard can a "soft" pulp be without being a "hard" pulp? How much contention, even litigation, might be avoided if we had some standard by which to measure the quality of sulphate pulp! We have our beating tests, of course, and they are valuable as a guide, for control work, but only so far as possible to duplicate a given set of conditions. Generally speaking no two operators using similar, but not identical, equipment can obtain the same result in testing the same pulp.

Readily Applicable Test Needed

We need some readily applicable test that will yield reliable and comparable results suitable not only for mill control work, but for referee purposes as well. The committee feels, however, that this is too big a task for any committee of three or four members each of whom is already heavily burdened with his daily job in the mill. Rather it is a problem which might challenge the attention of some group of scientists working in a public or quasi-public, institution, who can devote to it the time and energy which its importance and its difficulty demand and who have at their disposal the facilities needed for such an undertaking.

Sulphate Mill Odors

At our meeting one year ago the matter of odor nuisance and its abatement was suggested for our consideration. In this direction the committee has made no direct progress. Last summer a patent[1] was issued covering the use of phosphoric acid or phosphates, added to the digester, for the purpose of preventing the formation of methyl mercaptan or other organic sulphur compounds responsible for the odor nuisance. The writer made one experimental cook using 10 pounds of wood and disodium phosphate equal to 0.5 per cent of the wood as Na_2PO_4. All trace of disagreeable odor disappeared. It remains to be seen however, whether or not it would return in the recovery operation. There is also the matter of cost to consider. For if the cost were as little as fifty cents a ton of pulp any mill using the process would be handicapped in that extent in competing with mills not using it. Unless all would do so none could afford to.

It has been reported that the Nordstrom drying tower has accomplished remarkable results in absorbing the malodorous gases at the Crown-Willamette Paper Company's mill in Camas, Wash. The committee has not investigated this directly, however. The use of the drying tower would probably render it impossible to recover by-product turpentine from the digesters.

In some of the mills the steam and gases expelled when a cook is blown are condensed. For example the Central Paper Company, at Muskegon, Mich., are blowing the exhaust from the diffusers through a separator and spray condenser into a sewer discharging into the lake. Spraying seven hundred fifty gallons of water per minute through nozzles similar to inverted sprinkler heads eliminates the odor to a great extent.

The Odor Nuisance and Health

Serious as the odor nuisance is, particularly to those mills located in or near populous cities or towns, its importance is overshadowed by the belief existing in some quarters that the

[1] U. S. Pat. No. 1,507,841 to B. S. Summers, "Art of Making Paper Pulp."

malodorous gases are detrimental to public health. It has been reported that in one community there had been an alarming increase in pulmonary diseases, especially tuberculosis, since the establishment of a sulphate mill there. The rumor even quoted a prominent physician and a public health officer as authorities for the statement that the odor from the pulp mill was directly responsible for the situation. Investigation disclosed the rumor was entirely without foundation. Neither of the persons quoted had ever made any statement of that nature and the public health records showed that pulmonary diseases, and especially tuberculosis, were actually less prevalent in the pulp mill town than in any other place of its size in the state. Believing this should be followed up further the committee prepared a circular letter of inquiry which was sent to every sulphate pulp mill in United States and Canada. Replies were received from nearly every mill in North America. They were unanimous in declaring that any idea that the odors of the sulphate pulp mill are injurious to public health is absolutely without foundation. Several cited public health records to prove that pulmonary diseases, and especially tuberculosis, were actually less prevalent in their community than in other localities similarly situated where there was no pulp mill. One company enclosed a statement from the public health officer who declares health conditions had improved considerably since the pulp mill was established, probably because of better living conditions that followed the steadier employment of the pulp mill workers.

NEW YORK CITY NEWS

Re-elections of Wood Pulp Importers

The Association of American Wood Pulp Importers held its annual meeting on February 3 at the Uptown Club in New York, with a fairly large attendance. Hans Lagerloef, of the Lagerloef Trading Company, Inc., New York, was re-elected president for the ensuing year; Orval A. Wales, of Johaneson, Wales & Sparre, Inc., was re-elected vice-president; S. C. Willey, of Atterbury Brothers, Inc., was again chosen secretary, and William H. Anders, of the Perkins-Goodwin Co., was re-elected treasurer.

These officers, together with J. F. Patton, of Mead, Patton & Co., Inc., New York, compose the Board of Directors of the Association. Howard E. Atterbury, of Atterbury Brothers, Inc., was again selected National Councillor and J. A. Millar, of the Scandinavian Pulp Agency, Inc., was elected Substitute National Councillor.

Union Bag's Report Shows Loss

The preliminary financial statement of the Union Bag and Paper Corp., for the year 1926 shows operating profit of $73,990, after taxes and charges, but before depreciation. Assuming depreciation at about the same rate as heretofore, the result would be a loss of $180,039 for the year. This compares with a net profit of $223,083 after all charges and taxes in 1925. Current assets on December 31 last were $4,563,714, and current liabilities $1,600,823, contrasted with $4,549,222 and $1,722,902 respectively at the end of 1925.

The poor showing of the company is said to be the reflection of over-production in the paper bag industry, which condition has obtained for the past three years and has resulted in continual and often disastrous price cutting. During the past year, the Union Bag and Paper Corp. retired $5,980,000 six per cent first mortgage bonds at 105. This was accomplished with proceeds of sale of stock control in the St. Maurice Paper Co.

Paper Box Strike Ends

After lasting a period of 17 weeks, the strike of paper box workers in New York City came to an abrupt end on February 10 when the union manager, Fred Caiola, ordered the strikers to return to work, whereupon a large majority resumed their jobs in the hundred or more paper box plants in this city affected by the strike.

Some remained out on "shop strikes" to attempt enforcement of better sanitary and other conditions. Lack of public support and of funds for relief were said to be the causes attributed to the collapse of the strike. It was estimated that between 1,200 and 2,000 workers joined the strike and for a time the paper box manufacturing industry here was severely handicapped.

The termination of the strike was a distinct victory for the box manufacturers who refused flatly to have any dealings with the union.

Mohawk Receiver Reports Progress

According to Henry W. Brooks, Jr., of 6 Wall street, New York, one of the two receivers in equity of the Mohawk Paper Makers, Inc., of Cohoes and Waterford, N. Y., developments since the equity receivers took charge have been very favorable for the company.

Operating losses of the mills have been reduced something like 75 per cent by Receiver Brooks, who was appointed on December 4 last, and with the judicious use of money secured through the issuance of receivers' certificates, authorized by the Court, many needed improvements have been made in the two plants of the company which in turn has improved the quality and output of paper manufactured in the mills.

A modern cost system is being introduced and a strenuous sales campaign is being planned. Mr. Brooks states the business is making marked progress under his watchful eye. Harry I. Prankard, head of the company, known as an able papermaker with 30 years of experience, is now devoting his whole time to the manufacturing side of the business and his attention to details of production is resulting in a noticeable improvement in quality of product.

William H. Donaldson, formerly with Howell-Donaldson, Inc., wood pulp importers, and mill agents of 50 East 42nd St., New York, has become associated with the Perkins-Goodwin Co., of 33 West 42nd St., New York, as assistant to William H. Anders, in charge of the wood pulp department of the latter concern.

A composition of 50 per cent, 45 per cent of which is payable in corporate stock of the corporation, offered by R. F. Hammond, Inc., dealer in and importer of paper and pulp of 342 Madison Ave., New York, has been confirmed by the Court. The company recently was petitioned into bankruptcy by a group of creditors.

The Ideal Card and Paper Co., Inc., paper merchants of 157 West 22nd St., New York, has filed notice of an increase in capital stock from $5,000 to $25,000.

The Gatti Paper Stock Corp., large suppliers of raw material to paper mills, of 41 East 42nd St., New York, is equipping a packing plant at 44-56 Pittsburgh street, South Boston, Mass., which is expected to be ready for operation very soon. The company operates warehouses in Hoboken, N. J., and Holyoke, Mass.

The Hub Paper and Twine Co., Inc., one of the progressive jobbing concerns in New York, have moved from 207 East Fifth street to larger quarters at 29 Cooper Square, New York. In its new location the company will be enabled to carry more stock and thus give greater service to its customers.

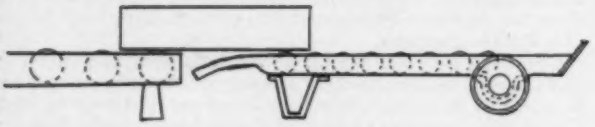
W. V. Spear, former sales manager of the Analomink Paper Co., of North Water Gap, Pa., has joined the Thomas J. McCormick Paper Corp., of 30 East 42nd St., New York, and has taken the sole agency of the Saxer Paper Mills, Inc., of Skaneateles, N. Y., manufacturers of textile and colored specialties, etc. The paper will be made under the supervision of J. H. Butler, Sr., former superintendent of the Analomink Paper Company.

Dr. Arthur D. Little, president of Arthur D. Little, Inc., Cambridge, Mass., was elected vice-chairman of the Engineering Foundation at its annual meeting in New York, recently. The Engineering Foundation is the Joint Research instrumentality of the American, Civil, Mining and Metallurgical, Mechanical and Electrical Societies and the United States Engineering Society.

Practical Helps for the Mill Man

Saves Handling in Trucking

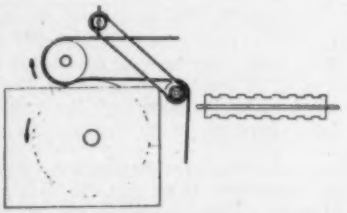
A MILL which ships much of its paper in boxes has a simple device for eliminating one or two motions in handling the boxes from the packing department to the cars. The boxes are lined, covered and packed on a roller conveyor.



When each box comes to the end of the roller conveyor, it is trucked to its place in the car. The two-wheeled trucks on which the boxes are handled are equipped with a set of rollers and the box simply rolls out onto the truck and the trucker walks away with it.

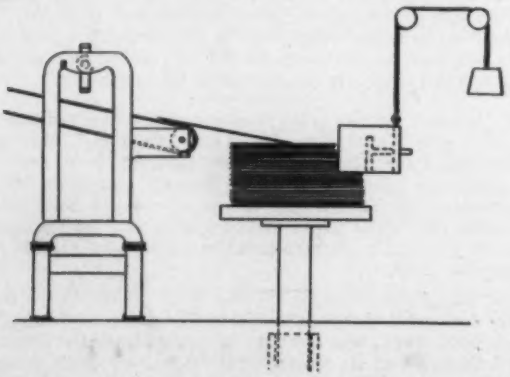
Sheet Cutter on a Wet Machine

ON that type of wet machine which delivers the pulp in sheets rather than in laps, the cutting of the sheet across the width of the machine is frequently accomplished by weakening the sheet with heavy soldered seams on the cylinder facing. To get the soldered place sufficiently heavy to weaken a thick sheet of pulp so that the rolls further on in the machine could pull it apart, it was sometimes found that drop-offs were encountered. One mill runs the device shown in the sketch to accomplish the sheet cutting without the solder on the cylinder face. The cutting knife is placed near the couch roll where the pulp is still soft. The knife edge is really about one-eighth of an inch thick and sinks into the soft pulp. The speed of the knife edge is just a little faster than the speed of the felt which carries the pulp. When the knife edge sinks into the pulp it pushes it ahead just a little and thus weakens the sheet so that it pulls apart readily at the proper place further on.



A Home-Made Layboy

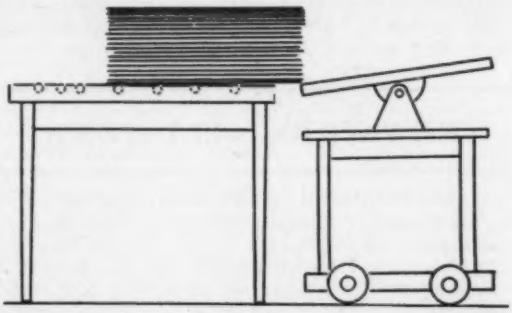
LAYBOYS are often expensive. A mill making fairly heavy cover papers is using the device shown in the accompanying diagram. At the left is shown a part of the cutter. The



belt conveyor is shown with a sheet running from it to the pile of sheets. In order to make the device effective, the cutter itself is set up in the air several feet—in fact, so that the roll of the belt conveyor shown is nearly head high on a fairly tall man. The sheets are shown being supported by a hydraulic lift. This lift is at the top of its travel when the first sheet is run onto it. As the pile grows, the boy in charge lowers the platform and the sheet falls always in its proper place in the pile. To keep the sheets in an even pile, the affair shown on the right of the diagram is used. It consists of a wooden corner suspended by a weight so that it may be raised or lowered as desired. The wooden corner has an adjustable back which is set closer or further as the order being made demands.

Improvement in Table for Interleaving Paper

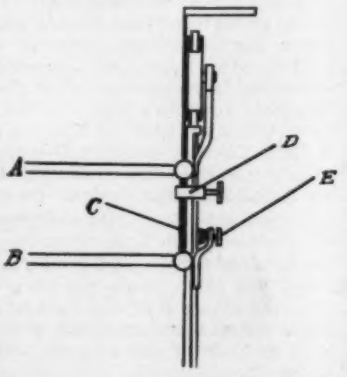
AFTER the pile of alternate sheets of paper and plates has been assembled, the moving of the mass becomes a problem. One progressive mill has put little rollers in the table



on which the paper is made ready for the platers. Then when the pile of paper is ready for the next operation, a man comes along with a queer little truck which has a tilting top. With the rollers on the table to aid him, he rolls the pile onto his truck and takes it away to the waiting plater. The truck is shown in the diagram as well.

To Run a High Head Behind the Second Slice

A FINE paper mill has found it desirable to run a high head in the pond back of the second slice. It had previously been the practice to run a head no higher than the deckle straps. The accompanying diagram shows how the matter was accomplished, with, according to the superintendent, an improvement in quality. (A) is the first slice (nearest the headbox or screens). (B) is the second slice. (C) is a brass plate set against the deckle frame between the first and second slices. The piece of metal runs down as close to the wire as good judgment permits. (D) is a clamp securing the plate to the deckle frame. (E) is a screw and spring for forcing the deckle strap against the plate thus preventing loss of stock.



The next meeting of the Paperboard Industries Association will be held at the Waldorf-Astoria Hotel, New York City, March 23, and 24, 1927. The Folding Box Group and Paperboard Group meets on the first day, with the Container Group and Joint Session of the three groups meeting on the second day.

Fifty Years
of
Progress in Pulp and Paper Manufacture
marking the
Golden Anniversary
of the
American Paper and Pulp Association

50 YEARS OF PROGRESS 1878-1927

Containing historical sketches of pulp and paper manufacturing concerns which have been in business for fifty years or more—machinery, chemical and supply houses now serving the pulp and paper manufacturing industry, in business fifty years or more —and a story of the pulp and paper industry in Canada.

Fifty-Year-Old Concerns Whose Advertisements Appear in This Section

Abendroth & Root Mfg. Company
American Engineering Company
American Steam Pump Company
A. P. W. Paper Company
The Bagley and Sewall Company
Baker Perkins Company
H. Belfield Company
Beloit Iron Works
L. L. Brown Paper Company
Bulkley, Dunton & Company
H. W. Butterworth & Sons Company
The Wm. Cabble Excelsior Wire Mfg. Co.
The Central Ohio Paper Company
Cheney Bigelow Wire Works
Crane Company
G. M. Davis Regulator Company
Dilts Machine Works, Inc.
Downingtown Manufacturing Company
Draper Brothers Company
Eastwood Wire Manufacturing Company
Fitchburg Paper Company
Grant Gear Works
Holyoke Machine Company
Wm. E. Hooper & Sons Company
E. F. Houghton & Company
Rodney Hunt Machine Company
F. C. Huyck & Sons
Industrial Works
Ingersoll-Rand Company
The Jeffrey Manufacturing Company
The Kalbfleisch Corporation
Kimberly-Clark Company
Knox Woolen Company
Lobdell Car Wheel Company
Pennsylvania Salt Manufacturing Co.
B. F. Perkins & Son, Inc.
Perkins-Goodwin Company
The Pusey & Jones Corporation
Rice, Barton & Fales
Rollins Engine Company
The P. H. & F. M. Roots Company
Joseph T. Ryerson & Son, Inc.
S. Morgan Smith Company
The Smith & Winchester Mfg. Company
Southwark Foundry & Machine Company
Taylor, Stiles & Company
Tileston & Hollingsworth Company
Union Machine Company
John Waldron Corporation
The Warren Manufacturing Company
T. B. Wood's Sons Company

Oldest Trade Association

Writing Paper Manufacturers Attain Splendid Growth

THE Writing Paper Manufacturers' Association is the oldest trade association in the United States. The first meetings of the manufacturers of this grade of paper were held in 1850. The industry was all located, at that time, in the Connecticut Valley and Berkshire Hills. The old records show informal get-togethers to discuss matters of mutual interest, and an occasional dinner with all of the lighter things of life which were allowed then in days of less moral supervision.

In 1853, the first semblance of a real organization was evidenced by meetings taking on the name of the New England Manufacturers of Loft Dried Writing Paper, but it was not until in the year 1861 that the present association, as such, was organized.

On February 13, 1861, Z. Marshall Crane, the son of the original Zenos Crane and father of the late W. Murray Crane, issued an invitation to other manufacturers of fine paper to be his guests at a meeting and dinner at Pittsfield, Mass. Some went by stage-coach to this meeting. At that time, in the adjacent town of Lee, all of the newsprint manufactured in the United States was being made of rags. Wood pulp had not as yet been discovered.

Such men as Charles O. Chapin, Wells Southworth, J. C. Parsons, Oscar Greenleaf, L. L. Brown and Byron Weston attended this gathering, at which time a constitution was adopted, the original copy of which is in the offices of the association at 44 Vernon Street, Springfield, Mass.

The first officers of the association were Harrison Garfield, president; Joseph Carew, vice-president; S. S. Rogers, secretary-treasurer. The Executive Committee was composed of A. H. Laflin, J. C. Parsons and O. H. Greenleaf.

Although the constitution was not adopted until 1861, an organization had been in existence, under another name, since 1850, thus placing this trade group well in advance of any other in the United States.

Although the Association in its earlier days confined its membership chiefly to New England, because most of the writing paper mills were located in that section, it now has long since become a national organization. It has fifty members, representing the entire industry, with mills located in Wisconsin, Ohio, Michigan, Pennsylvania, as well as in the New England States.

It is interesting to note that in 1860, the daily production of the writing paper mills was 38 tons, whereas today, it is over 1,500 tons. Over the same period, the gross sales have increased from $5,000,000 to $105,000,000. The accompanying statement issued in 1860 is interesting in this regard. It will be noted that only six of the mills are still operating under the same names.

In 1913, it was decided to carry on the work of the association as a business organization, giving direct service to the mills, and a committee was appointed to procure a man to give his entire time to this work. The committee was composed of H. A. Moses, chairman; E. R. Behrend, W. Murray Crane, C. A. Crocker, Alfred Leeds, A. R. Smith. They selected E. H. Naylor to become secretary-treasurer, and he has held that position ever since.

The Association issues reports on orders, production, shipments and stock on hand every week, besides detailed reports as regards purchases of raw materials, labor rates and various reports on advertising, market possibilities, import information and all such matters as are of interest and value to the membership. The Association operates entirely on the principle of presenting the true facts about market conditions without secrecy and then each manufacturer can, with such knowledge, act intelligently and individually in the conduct of his own business.

The present officers and executive committee are: President, Winthrop M. Crane, Jr.; 1st vice president, D. K. Brown; 2nd vice president, A. H. Nevius; secretary-treasurer, E. H. Naylor. Executive Committee chairman, W. M. Crane, Jr., D. K. Brown, A. H. Nevius, B. A. Franklin, A. C. Gilbert, A. R. Smith, S. L. Willson. Advisory members: Philip Weston, N. W. Wilson.

The officers of the Association are located at 44 Vernon Street, Springfield, Mass., and are shared also by the Cover Paper Manufacturers' Association—another old organization, formed in 1873—and the Tissue Paper Manufacturers Association, founded in 1880. The Association also maintains a New York office at 18 East 41st Street, New York City.

STATEMENTS

Of Writing Paper Mills in the United States for the Years 1850 and 1860.

Names of Proprietors	Location	Exhibit for 1850		Exhibit for 1860	
		No. of Engines	Daily Product	No. of Engines	Daily Product
A. S. Chamberlin & Co.	Dalton, Mass.	..	....	4	1000
Brown & Hals	Dalton, Mass.	2	700	2	750
Carson Brothers	Dalton, Mass.	4	1000	6	1800
Thomas Colt	Pittsfield, Mass.	2	600	2	900
Crane & Co.	Dalton, Mass.	3	600	..	....
Crane Wilson & Co.	Dalton, Mass.	..	....	4	1600
L. L. Brown & Co.	South Adams, Mass.	..	....	8	4200
Benton & Garfield	Lee, Mass.	5	1200	7	2000
May & Rogers	Lee, Mass.	4	800	8	2000
Platner & Smith	Lee, Mass.	13	4000	26	9000
Chaffee & Hamlin	Lee, Mass.	..	....	3	1000
P. C. Baird	Lee, Mass.	..	....	6	1600
South Lee Mfg. Co.	South Lee, Mass.	14	3000	13	4000
E. H. Owen	Stockbridge, Mass.	..	....	4	2600
Gibson, Crosby & Robbins	Mill River, Mass.	4	900	7	2000
Remington & Gibbs	Lenox Furnace, Mass.	..	....	3	1000
Greenleaf & Taylor Mfg.	Huntington, Mass.	..	....	5	2000
Chapin & Gould	Russell, Mass.	4	1200	6	2000
Jessup & Laflin	Westfield, Mass.	4	1200	6	1800
Southworth Mfg. Co.	W. Springfield, Mass.	8	2500	8	2300
Agawam Paper Co.	Mittineague, Mass.	..	....	3	1500
Nyassett Paper Co.	Springfield, Mass.	..	....	5	1400
Parsons Paper Co.	Holyoke, Mass.	..	....	17	6000
Holyoke Paper Co.	Holyoke, Mass.	..	....	4	1700
Carew Manufacturing Co.	S. Hadley Falls, Mass.	4	1200	5	1700
Wm. Clark & Co.	Northampton, Mass.	..	....	6	2000
Nelson Shaw & Co.	Cummington, Mass.	..	....	4	1000
D. & J. Ames	Springfield, Mass.	6	1000	..	....
D. & J. Ames	Chicopee, Mass.	12	3000	..	....
Geo. L. Maynard	Hardwick, Mass.	2	500	..	....
Eagle Mills Co.	Suffield, Conn.	4	1000	3	1000
Goodwin & Co.	Hartford, Conn.	6	1500	..	....
Goodwin & Sheldon	Hartford, Conn.	4	1000	..	....
Platner & Porter Mfg. Co.	Unionville, Conn.	3	800	7	2400
J. B. Sheffield & Co.	Saugerties, N. Y.	..	....	8	3800
D. Carson & Co.	Moodna, N. Y.	..	....	6	1800
J. DeWitt Walsh	Newburg, N. Y.	3	800	3	800
Laflin Brother	Herkimer, N. Y.	4	1000	7	2000
E. Chamberlin & Co.	Watertown, N. Y.	..	....	3	800
Colt & Crane	Ballston, N. Y.	2	500	..	....
Benton & Jones	Bennington, Vt.	2	1200	4	2000
E. A. Jessup	Philadelphia, Pa.	2	250	2	400
Kempton & Mullin	Mt. Holly, N. J.	5	....	4	1400
McDowells	Philadelphia, Pa.	4	1800	..	....
John Garroll	Mill River, Pa.	..	....	4	2000
		125	33,250	224	76,950

Whole number of engines in 1850, 125; in 1860, 224. Increase of engines, 99. Number of pounds made daily in 1850, 33,250; in 1860, 76,950. Daily increase, 43,700 pounds.

Fifty Years of the American Paper and Pulp Association

Outline History of the Association, Its Early Aims and Objects and Latter-Day Achievements

THE organization of the American Paper and Pulp Association was the outcome of a national convention of paper manufacturers held at the Grand Union Hotel, Saratoga Springs, N. Y., on August 28, 1878, which was called by the manufacturers of writing, book, news and manila papers for the purpose of considering ways and means of stabilizing the industry, which had become demoralized from over-production and the cutting of prices. The call for the meeting was signed by William Whiting, D. P. Crocker, George E. Marshall, Charles O. Chapin and C. O. Brown, who had formed themselves into a committee for the purpose, with Mr. Whiting as chairman and Mr. Chapin secretary. After an introductory statement concerning a preliminary meeting of paper manufacturers, at which the call for a convention had been authorized, it was stated that all matters affecting the general good of the trade would be considered, "especially the question of demand and supply, and the best means of insuring stability to our business now seriously demoralized." It was requested that replies be sent to Mr. Chapin, secretary of the committee, at his place of business in Springfield, Mass.

The Time Was Ripe

There was need for concerted action of the kind proposed, seeing that a new business alignment was taking shape, as the country was emerging from the period of panic and hard times that characterized the four years from 1873 to 1877. At the immediate close of the war great prosperity developed, with people buying and selling recklessly, giving rise to an era of extravagance which led to the panic and hard times referred to.

Business was beginning to improve generally in all directions at the time the meeting was called. With new processes of pulping wood by both chemical and mechanical means, production had been greatly increased without, however, any adequate means being taken to regulate distribution and prices. The manufacturers of straw wrapping paper had previously taken action to curtail production, a special meeting of the Straw Wrapping Paper Makers' Association having been held two months previously in Albany, N. Y., when plans were made for a general conference of all paper manufacturers. The time was accordingly ripe for a get-together meeting for the discussion of vexed problems growing out of a certain over-capacity and over-production which led to price cutting and general demoralization, influenced not a little, then as now, by foreign competition and the increasing cost of raw materials. The call for a meeting was answered by more than 100 paper manufacturers who organized what was called the American Paper-Makers' Association. The preliminary meeting was presided over by Gen. W. C. Plunkett, of Massachusetts, Charles O. Chapin and W. H. McClung being named secretaries of the meeting; vice-chairmen were appointed consisting of A. E. Harding, of Ohio; William Whiting, of Massachusetts; L. C. Woodruff, of Buffalo, and two others.

The meeting lasted two days and in addition to resolutions covering the reasons for organizing, articles of association were drawn up. The resolutions emphasized the existing demoralization of trade, reciting among other things "that a sense of duty and interest of all manufacturers called them together to unite in a well directed and organized effort to rescue the paper trade from demoralization and their mill properties from ruin." . . . "The present demoralization in trade was due to over-production and, therefore, the trade should provide some means whereby production might be regulated automatically."

The Call to Action

A committee was appointed consisting of five members, each from writing-paper firms, newsprint manufacturers and manufacturers of manila papers, respectively. This committee of fifteen met and recommended mill owners to agree to run their mills five-sixths of the time monthly for six months, a recommendation which was received favorably by the general convention and adopted by resolution. The convention further resolved that "The time has come when an intelligent sense of duty and interest calls upon the paper manufacturers of the country, one and all, cordially to unite in a well-directed, organized effort to rescue our business from demoralization and our mill property from ruinous depreciation."

"That by acting intelligently together we can make our business what it ought to be and place it on a basis more satisfactory and secure than it was or ever can be while we work in aimless, independent rivalry with each other."

Adoption of a Constitution

The articles of association were well calculated to serve the purpose in view, though some of the provisions may seem strange in contrast with the by-laws of existing associations. As finally adopted, the articles read as follows:

"Article I. This association shall be called the American Paper-Makers' Association. It shall consist of all manufacturers of paper in the United States who shall subscribe this constitution and comply with its provisions.

"Article II. The officers shall be a president, whose duty it shall be to preside at all meetings of the association, two vice-presidents, a secretary and a treasurer.

"Article III. There shall be five executive committees, of three members each, selected from the five divisions hereafter named.

"Article IV. The president and two vice-presidents, secretary and treasurer shall be a Central Executive Committee, whose duties shall be to arbitrate upon all questions referred to them by the executive committees of the different sections, and to decide such other matters as may properly come before them, and their decision shall be final.

"Article V. The headquarters of this association shall be at Springfield, Mass. This association shall hold meetings annually, to be called at such time and place as the Central Executive Committee shall determine.

"Article VI. The members of this association shall be separated into five divisions, having their headquarters, respectively, at Boston, New York, Philadelphia, Cincinnati and Chicago. Members of this association shall attach themselves to such division as shall be most convenient to them.

"Article VII. The officers of this association shall be chosen by ballot at each annual meeting, and shall hold their offices for one year and until their successors are elected.

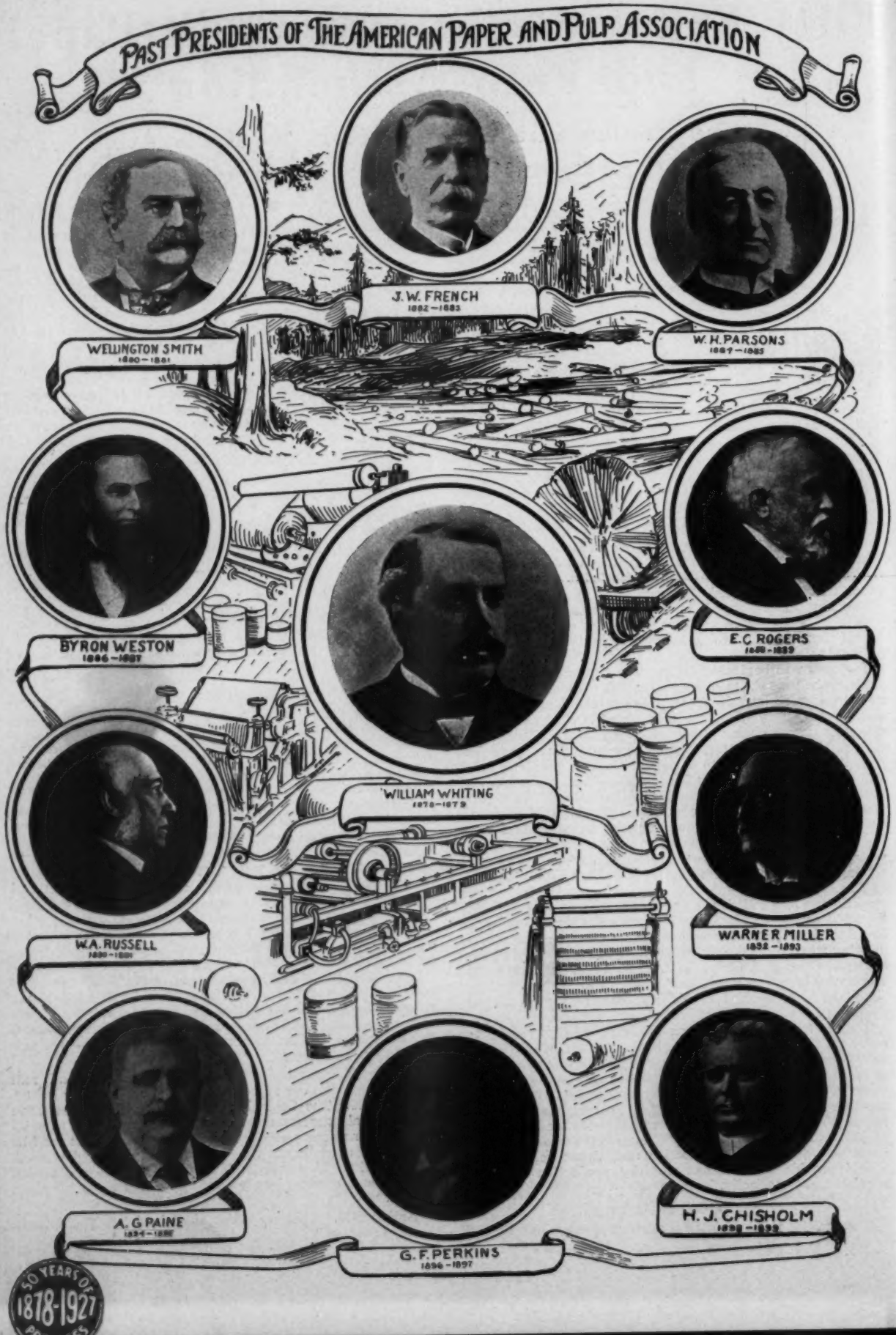
"Article VIII. It shall be the duty of the Executive Committee of the respective divisions to carry into effect the action of the general association, and to consider and arbitrate upon all questions and matters arising within their respective divisions under any agreement made between members of this association.

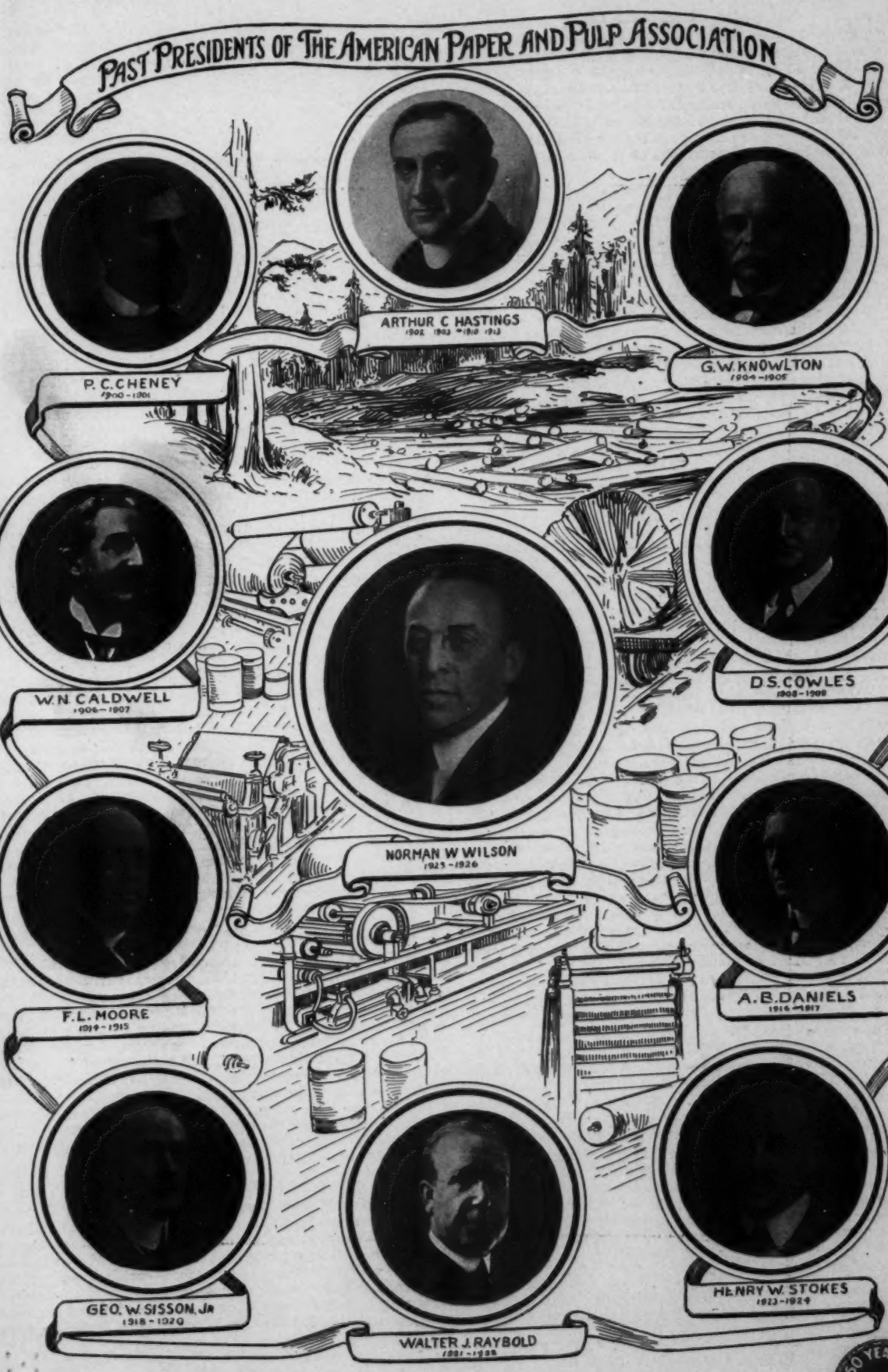
"Article IX. In all meetings of this association, each mill shall be entitled to one representative and one vote.

"Article X. The Central Executive Committee shall have power to make assessments upon the members of the association to pay necessary expenses, and such assessments shall be apportioned according to the production of mills represented.

"Article XI. This constitution may be altered or amended at any annual meeting by a vote of two-thirds of the members present.

"Article XII. That no officer shall hold two positions in the organization."


PAST PRESIDENTS OF THE AMERICAN PAPER AND PULP ASSOCIATION
J. W. FRENCH
1882 – 1883
WELLINGTON SMITH
1880 – 1881
W. H. PARSONS
1887 – 1895
BYRON WESTON
1896 – 1897
WILLIAM WHITING
1878 – 1879
E. C. ROGERS
1888 – 1889
W. A. RUSSELL
1880 – 1881
WARNER MILLER
1892 – 1893
A. G. PAINE
1894 – 1895
G. F. PERKINS
1896 – 1897
H. J. CHISHOLM
1898 – 1899
50 YEARS OF PROGRESS
1878-1927



50 YEARS OF PROGRESS 1878-1927

Value of the Industry in 1878

At the time the Association was organized and the foregoing constitution adopted, the capitalization of the paper industry in the United States was estimated at $35,000,000, and the number of persons employed at 17,910. Voelter's process of grinding wood to fiber mechanically had been introduced into the United States by Albrecht Pagenstecher and his associates, but the sulphite process had not made much progress, the soda process of cooking wood being the chief chemical process in use.

Regulating Prices and Production

More favorable conditions for manufacturing began to prevail and there was an increased demand for paper. High productive duties prevented competition on most commodities except paper products, and at the second meeting of the American Paper-Makers' Association held at Saratoga Springs, N. Y., on July 30, 1879, a movement was started to effect some plan of agreement for regulating the production and price of paper. After the manufacturers of newsprint paper had advanced prices to a level corresponding somewhat with the general rise in commodity prices, there was the usual expression of dissent from newspaper publishers. Much of the discussion that took place at this meeting would never be permitted under existing laws, or if indulged in would lead to the dissolution of the association by government process, but there were no Sherman or Donnelly Acts on the statute books then.

Political Activity

The paper industry began to be faced with congressional activity for the reduction of the tariff on imported paper, particularly newsprint paper, and complaints were heard regarding excessive taxation of manufacturing plants. In discussing the fear of congressional action affecting the tariff on paper, it was rather pathetically pointed out by General Plunkett that "so far as our relations to Congress today exist, we are almost helpless. What they will do, we do not know. We know what the history has been of this last extra session, and we know if the country is saved from any peril, how it has been saved. Therefore, I say it is important that we look to our interests in choosing members of Congress and in regard to the measures to be adopted."

It will be seen, therefore, that the Association at that early date was beginning to be occupied with questions of national importance and bearing, but complaint was made of a lack of co-operation by a majority of the members and of the negligible results achieved. A committee of the Association appeared before the Tariff Commission at Chicago in 1882. At that time, there was no generally expressed demand on the part of American paper manufacturers for higher tariff duties on paper, nor was there any demand for a reduction in the tariff, except by a few newspaper publishers who clamored for free printing paper. Meanwhile imports of printing paper fell off and importations of writing paper increased, which was curious, seeing that the former was permitted entry at a very low rate of duty while the duty on writing paper was high. It was felt by manufacturers at that time that no benefit to business would result by asking for higher rates on imported papers, a feeling that was soon to be changed.

Encouragement was given by the Association to the opening up of new export fields for paper and it was recommended to the Government to establish and maintain steamship lines between the principal shipping ports of this country and South and Central American ports. An Export Committee was among the standing committees of the Association and it was recommended that the following resolution be brought to the attention of the "proper Congressional authorities":

"Resolved, That it is the sense of this Association that Congress be respectfully, but most earnestly, urged to take such wise measures as may be found expedient to establish and maintain steamship lines between our own and foreign ports, especially the ports of South and Central America, that thereby the trade of these ports in our industry, now apparently waiting only the facility of quick, regular and economical conveyance, may be secured."

Efforts to Limit Production

The tariff question came prominently to the front at the fifth annual meeting of the Association in 1882, but the attendance was disappointing and a plan was adopted to arouse greater interest in the work of the Association. At the meeting, a circular letter was drawn up and sent to every manufacturer of paper in the United States asking them to sign and return to the secretary a document reading as follows:

"To the Secretary of the American Paper-Makers' Association:

"Dear Sir—We, the undersigned, hereby agree to become members of the American Paper-Makers' Association, and agree to control the running of our mill in accordance with the terms and conditions agreed upon by the American Paper-Makers' Association, understood to be as follows:

"1—Each manufacturer to report to the secretary on the first of each month, on blank forms provided for the purpose, his view of the aspect of the trade in general, and as to whether, in his judgment, the best interests of the business require a shut-down of the mills making any particular class of paper; and if he thinks a stoppage desirable, to say how long he thinks it should last.

"2—The secretary to report in blanks provided for the purpose to every manufacturer who subscribes to this agreement, by the 20th of each month of the number and proportion of the manufacturers who report as herein provided, and what said reports authentically represent.

"3—When it shall appear that three-fourths of the manufacturers in any one class advise a shut-down in that class, the executive committee to issue a call to each and every member of said class for such a stoppage as will correspond with the average of what is required by the monthly reports, which call is to be strictly complied with by every member of this Association in said class.

"4—No call for a shut-down to be binding unless issued by the executive committee and duly signed by both president and secretary of the Association.

"5—No shut-down to be for a less period than three consecutive days, nor longer than six consecutive days in any one month.

"6—All calls for a shut-down to be issued by the 20th of any month, and the stoppage to be within the next month succeeding that in which the call is issued.

"7—Every manufacturer to have the privilege of shutting down at his own pleasure, provided he covers the time called for within the month specified, as stated in Article V.

"8—At the expiration of every shut-down, each manufacturer to report promptly to the secretary, who shall within ten days thereafter issue a report directed to every member of the Association, showing as exactly as possible how the call for the stoppage has been complied with.

"9—Each member to contribute to the treasury of the Association one dollar per month for each machine under his control as a fund to be used exclusively for Association purposes.

"10—The executive committee to employ whatever assistance may be deemed necessary to carry out the provisions of this agreement, and all expenses incurred for Association purposes to be paid from Association funds.

"11—This obligation to be binding on any class when 75 per cent of the product of such class of mills has subscribed to this agreement, due notice of which shall be sent by the secretary to each member of the class concerned as promptly as possible.

"It has been suggested that the percentage requisite to control production should be fixed by each class for itself (not to be less than 75 per cent), and suggestions in regard to this are requested."

Change of Name

At the sixth annual meeting in 1883, a change in name took place, American Paper Manufacturers' Association being the new designation. In place of the old geographical divisions, divisions were formed pertaining to the classes of paper manufactured and there were five of these—writing paper; book, news and colored paper; manila paper; board, and straw wrapping. A few years later the name of the Association was again changed to the title it bears today, American Paper

and Pulp Association. The membership was increased correspondingly by the acquisition of pulp manufacturers, making it necessary to establish office headquarters at New York, under the presidency of Hugh J. Chisholm, where a statistical bureau was organized, as well as a labor bureau.

History of Technical Association

During the presidency of Arthur C. Hastings in 1911, the idea of forming a technical division had been conceived, and in 1914 a plan of organization was proposed. At the annual meeting in February, 1915, a tentative organization was effected, with Henry E. Fletcher as temporary chairman. He appointed a committee of five to continue organization work and the first meeting of the committee was held in Chicago, on April 6. 1915. The committee met again in Chicago on May 6, 1915, with Frank L. Moore, president of the American Paper and Pulp Association in the chair. After making some changes in the text of the constitution and adopting the title, "Technical Section of the American Paper and Pulp Association," a permanent organization was formed, with an executive committee composed of Henry E. Fletcher, chairman, and W. G. MacNaughton and Ernest Mahler, associates; Thomas J. Keenan was elected secretary-treasurer, and Paper was named the official journal. The new organization was started under the most favorable auspices with a spirit and activity which promised splendid results in the future of the industry.

Membership Widened

Membership in the Technical Section was at first restricted to members and employees of members of the American Paper and Pulp Association, but at the first fall meeting of the Section, held in connection with the National Exposition of Chemical Industries at the Grand Central Palace, New York, September 23, 1915, it was decided to broaden the activities of the Section, and an amendment to the constitution was adopted providing for the admission to active membership of all who could meet the requirements for membership, irrespective of whether they were employees or members of the American Paper and Pulp Association.

Name Changed to T. A. P. P. I.

At the first annual meeting of the Technical Section on February 17, 1916, a general revision of the constitution was effected, and the name of the organization was changed to "The Technical Association of the Pulp and Paper Industry." The articles and sections of the constitution pertaining to requirements for membership were changed in a number of particulars and a new grade of junior members was established. Henry E. Fletcher was chosen president and Thomas J. Keenan, secretary-treasurer.

Prize Essay Contest

At the second annual meeting of the Technical Association, prizes of $400 were awarded for papers submitted in a prize essay competition which had been instituted at the organization meeting in Chicago. Wililam G. MacNaughton was elected president at this meeting, but served for one month only, his removal from Port Edwards, Wis., to Millwood, Wash., early in March making it difficult for him to retain active direction of the Association's affairs. An exchange of offices was accordingly effected between him and Vice President Carruth, by arrangement with the executive committee. Henry P. Carruth thus served as president of T. A. P. P. I. during the association year 1917-18, and was elected for another term at the next annual meeting.

Growth of the Parent Association

The American Paper and Pulp Association was beginning to develop increased strength and influence, and it performed valuable services to the country, through various committees technical and otherwise, during the Great War. When Frank L. Moore retired as president in 1916, he announced that the Association was free from debt and headed for a substantial growth. Doctor Hugh P. Baker who had manifested great interest in the work of the Techncial Association became secretary of the Association in 1920, when George W. Sisson, Jr., was serving his third term as president. It was about this time that the various separate associations and bureaus were brought into more direct affiliation with the American Paper and Pulp Association. The appointment of various war committees a year or two previously had done much to stimulate unified action and the Association began to assume a definite place as a great national, federated organization. The field of action occupied by it is sufficiently well known but the record of the Association's growth in membership and influence under the direction of Executive Secretary Hugh P. Baker and under the respective presidencies of George W. Sisson, Jr., W. J. Raybold, Henry W. Stokes, and Norman Wilson, deserves to be set forth, if only in outline. The following tabulation is presented as a result of interviews with Doctor Baker and the assistant secretary, Oliver M. Porter:

1—Successful presentation of the industry's tariff needs in 1921.

2—Financial reorganization of the association, establishing direct mill memberships and affiliated association memberships.

3—Both general and specific statistical service to the industry in carrying on and expanding the Federal Trade Commission's statistical summary.

4—Friendly contact committees established for co-operation with Canada and European countries.

5—Direct personal contacts with leading executives and associations of European papermaking countries through visits of the Association's officers in 1922 and 1926.

6—Foundation established for effective information service with the object of securing national advertising of the paper industry, as well as giving direct service to mills in membership and to the public in its interest in the paper industry.

7—Standardization effected in several grades of paper and an aggressive committee studying the problem in the interests of the industry.

8—Paper Division of the Department of Commerce established with the co-operation of the industry, as a direct result of the Association's efforts.

9—Forestry as a means of insuring the industry's supplies of raw material brought persistently before the members of the Association through the establishment and work of a Woodlands Section.

10—Groundwork laid for assistance to the Government in its efforts to prevent the importation of misclassified and undervalued papers, which finally led to the organization of the Import Committee.

11—Association responsible for the organization of the Committee on Perpetuation, which has been active in promoting the interests of the industry.

12—Aggressive membership campaign has succeeded to such an extent that the Association, as never before, now effectively represents the entire paper industry.

13—Emergency service to the industry in matters of coal, casein, rosin, etc., thus demonstrating the value of a representative national association.

14—As result of persistent effort in bringing before the industry the beneficial results of organized research, authorization has been secured for the development of a Department of Research in the Association, and funds are being collected for the employment of an engineer, whose first studies will be on the problem of stream pollution.

15—Through careful cultivation of the Department of Commerce and other government agencies, the position of the Association in representing the industry has been firmly established at Washington and in other State capitals.

16—The Association is recognized as the representative organization of the paper industry, not only by the Government, but also by such organizations of business men as the U. S. Chamber of Commerce, the National Industrial Conference Board, etc.

17—The Association has been aggressive in strengthening and co-ordinating organized effort in the paper industry in bringing about closer contacts with the service associations and the smaller affiliated associations. It is studying the problem of developing new markets for paper and paper products, both here and abroad, through activities of its statistical service and an aggressive Committee of New Uses.

18—Through its offices in New York and the efforts of its staff, the Association is providing facilities for group meetings, conferences and conventions, thus bringing together representatives of the entire paper industry for consideration of common problems.

Former Officers of American Paper and Pulp Association

1878-1879

President, Hon. William Whiting, Holyoke, Mass.; Vice President, Gen. John T. Averill, St. Paul, Minn.; Vice President, John H. Hall, New York; Secretary, Charles O. Chapin, Springfield, Mass.; Treasurer, James Hill, Middletown, Ohio.

1879-1880

President, Hon. William Whiting, Holyoke, Mass.; 1st Vice President, Wellington Smith, Lee, Mass.; 2nd Vice President, John T. Averill, St. Paul, Minn.; Secretary, Charles O. Chapin, Springfield, Mass.; Treasurer, James A. Hill, Middletown, Ohio.

1880-1881

President, Wellington Smith, Lee, Mass.; 1st Vice President, O. H. Greenleaf, Holyoke, Mass.; 2nd Vice President, William Manning, Miamisburg, O.; Secretary, Charles O. Chapin, Springfield, Mass.; Treasurer, George W. Wheelwright, Boston, Mass.

1881-1882

President, Wellington Smith, Lee, Mass.; 1st Vice President, O. H. Greenleaf, Holyoke, Mass.; 2nd Vice President, William Manning, Miamisburg, O.; Secretary, Charles O. Chapin, Springfield, Mass.; Treasurer, George W. Wheelwright, Boston, Mass.

1882-1883

President, Wellington Smith, Lee, Mass.; 1st Vice President, O. H. Greenleaf, Holyoke, Mass.; 2nd Vice President, A. E. Harding, Franklin, O.; Secretary, Charles O. Chapin, Springfield, Mass.; Treasurer, George W. Wheelwright, Boston, Mass.

1883-1884

President, J. W. French, Three Rivers, Mich.; Vice Presidents: Writing, O. H. Greenleaf, Springfield, Mass.; Book, J. G. Ditman, Philadelphia; Newspaper, J. L. Rubel, Louisville, Ky.; Manila, George West, Ballston, New York; Straw paper, George N. Friend, Lockland, O.; Boards, Maurice Fitzgibbons, Boonton, N. J.; Secretary and Treasurer, D. P. Crocker, Springfield, Mass.

1884-1885

President, Wm. H. Parsons, New York; Vice Presidents: Writing, O. H. Greenleaf, Holyoke, Mass.; W. R. Sheffield, Saugerties, N. Y.; Book, George R. Dickinson, Holyoke, Mass.; J. L. Rubel, Louisville, Ky.; News, Geo. W. Russell, Lawrence, Mass.; J. A. Kimberly, Appleton, Wis.; Manila, J. T. Averill, St. Paul, Minn.; Moses Newton, Holyoke, Mass.; Straw Wrapping, H. S. Van de Carr, Stockport, N. Y.; C. M. Smith, Chicago; Straw Boards, B. C. Faurot, Lima, O.; C. D. Brown, Portland, Me.; Secretary and Treasurer, D. P. Crocker, Springfield.

1885-1886

President, Wm. H. Parsons, New York; Vice Presidents: Writing, O. H. Greenleaf, Holyoke, Mass.; W. R. Sheffield, Saugerties, N. Y.; Book, Augustine Smith, New York; George H. Friend, Lockland, O.; News, Charles T. Crocker, Boston, Mass.; J. Van Nortwick, Chicago, Ill.; Manila, J. T. Averill, St. Paul, Minn.; Charles A. Dean, Boston, Mass.; Straw Wrapping, H. S. Van de Carr, Stockport, N. Y.; C. M. Smith, Chicago; Boards, C. D. Brown, Portland, Me.; J. F. Sieberling, Akron, O.; Secretary and Treasurer, D. P. Crocker, Springfield.

1886-1887

President, Hon. Byron Weston, Dalton, Mass.; Secretary and Treasurer, E. C. Rogers, Holyoke, Mass.; Vice Presidents: Writing, John S. McElwain, Holyoke, Mass.; C. H. Harding, Franklin, O.; Book, Edward C. Taft, Holyoke, Mass.; M. B. Mason, Boston, Mass.; News, George W. Russell, Boston, Mass.; Hiram Allen, Sandy Hill, N. Y.; Manila, Hon. George West, Ballston Spa, N. Y.; Moses Newton, Holyoke, Mass.; Straw Wrapping, H. S. Van de Carr, Stockport, N. Y.; C. M. Smith, Chicago; Boards, C. D. Brown, Portland, Me.; J. F. Selberling, Akron, O.

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1888-1889

President, E. C. Rogers, Holyoke, Mass.; Vice Presidents: Writing, T. A. Mole, Adams, Mass.; C. H. Mullen, Mount Holly Springs, Pa.; Book, M. B. Mason, Boston, Mass.; N. T. Pulsifer, Manchester, Conn.; News, C. G. Weeks, Skanateles, N. Y.; Loren Allen, Sandy Hill, N. Y.; Manila, J. M. Waterbury, New York; J. M. Johnson, Middletown, O.; Straw Wrapping, H. S. Van de Carr, Stockport, N. Y.; C. M. Smith, Chicago; Boards, C. D. Brown, Portland, Me.; C. L. Hawes, Dayton, O.; Chemical Fiber, E. H. Clapp, Boston, Mass.; R. H. Emerson, Jackson, Mich.; Secretary, Oscar S. Greenleaf, Holyoke, Mass.

1889-1890

President, E. C. Rogers, Holyoke, Mass.; Vice Presidents: Writing, T. A. Mole, Adams, Mass.; C. H. Mullen, Mount Holly Springs, Pa.; Book, M. B. Mason, Boston, Mass.; F. C. Shattuck, Neenah, Wis.; News, C. G. Weeks, Skaneateles, N. Y.; Warren Curtis, Palmers' Falls, N. Y.; Manila, J. M. Waterbury, New York; J. M. Johnson, Middletown, O.; Straw Wrapping, H. S. Van de Carr, Stockport, N. Y.; C. M. Smith, Chicago, Ill.; Boards, C. D. Brown, Portland, Me.; O. C. Barber, Akron, O.; Chemical Fiber, E. H. Clapp, Boston, Mass.; R. H. Emerson, Jackson, Mich.; Secretary, Oscar S. Greenleaf, Holyoke, Mass.

1890-1891

President, W. A. Russell, Lawrence, Mass.; Vice Presidents: Writing, B. D. Rising, Springfield, Mass.; C. H. Mullin, Mount Holly Springs, Pa.; Book, Charles D. Brown, Boston, Mass.; F. C. Shattuck, Neenah, Wis.; News, T. F. Rice, Chicago, Ill.; Warren Curtis, Palmer's Falls, N. Y.; Manila, D. W. Mabee, Ballston Spa, N. Y.; Robert McAlpine, Marinette, Wis.; Straw Wrapping, H. S. Van de Carr, Stockport, N. Y.; H. E. Mead, Dayton, O.; Boards, E. B. Denison, Portland, Me.; O. C. Barber, Akron, O.; Chemical Fiber, J. A. Kimberly, Appleton, Wis.; Moses Newton, Holyoke, Miss.; Secretary, William T. Barker, Boston, Mass.; Treasurer, Oscar S. Greenleaf, Springfield, Mass.

1891-1892

President, William A. Russell, Lawrence, Mass.; Vice Presidents: Writing, William Whiting, Holyoke, Mass.; Book, George W. Russell, Lawrence, Mass.; News, F. H. Parks, Glens Falls, N. Y.; Manila, Robert McAlpine, Marinette, Wis.; Straw Wrapping, H. E. Mead, Dayton, O.; Boards, O. C. Barber, Akron, O.; Wood Pulp, Hugh J. Chisholm, Portland, Me.; Chemical Fiber, A. G. Paine, New York; Secretary and Treasurer, William T. Barker, Boston, Mass.

1892-1894

President, Warner Miller, New York; Vice Presidents: Writing, William Whiting, Holyoke, Mass.; Book, George W. Russell, Lawrence, Mass.; News, H. A. Frambach, Kaukauna, Wis.; Manila, J. S. Van Nortwick, Appleton, Wis.; Straw Wrapping, Thomas F. Rice, Chicago, Ill.; Boards, O. C. Barber, Akron, O.; Wood Pulp, Hugh J. Chisholm, Portland, Me.; Chemical Fiber, A. G. Paine, New York; Secretary and Treasurer, William T. Barker, Boston, Mass.

1894-1896

President, Augustus G. Paine, New York; Vice Presidents, Writing, Arthur W. Eaton, South Lee, Mass.; Book, William T. Barker, Boston, Mass.; News, H. A. Frambach, Kaukauna, Wis.; Manila, W. C. Hamilton, Marinette, Wis.; Straw Wrapping, J. B. Halliday, Chicago, Ill.; Wood Pulp, Hugh J. Chisholm, Portland, Me.; Chemical Fiber, Thomas Duncan, Hartford, Conn.; Boards, O. C. Barber, Akron, O.; Secretary and Treasurer, George C. Sherman, Watertown, N. Y.

1896-1897

President, George F. Perkins, New York; Vice Presidents: Writing, W. S. Whiting, Holyoke, Mass.; Book, J. N. Mohr, Philadelphia, Pa.; News, G. C. Sherman, Watertown, N. Y.; Manila, D. W. Mabee, Ballston Spa, N. Y.; Straw Wrapping, M. J. Fitch, Chicago, Ill.; Wood Pulp, K. B. Fullerton, New York; Chemical Fiber, A. G. Paine, Jr., New York; Boards, J. W. French, Niles, Mich.; Secretary and Treasurer, W. H. Parsons, Jr., New York.

1897-1898

President, Hugh J. Chisholm, Portland, Me.; Vice Presidents: Writing, W. F. Whiting, Holyoke, Mass.; Book, J. N. Mohr, Philadelphia, Pa.; News, G. C. Sherman, Watertown, N. Y.; Manila and Wrapping, Col. S. P. Train, Boston; Wood Pulp, K. B. Fullerton, New York; Chemical Fiber, A. G. Paine, Jr., New York; Boards, Col. J. W. French, Niles, Mich.; Secretary and Treasurer, C. W. Lyman, Herkimer, N. Y.

1898-1899

President, Hugh J. Chisholm, Portland, Me.; Vice Presidents: W. F. Whiting, Holyoke, Mass.; Book, J. N. Mohr, Philadelphia, Pa.; News, G. C. Sherman, Watertown, N. Y.; Wrapping, Col. Samuel P. Train, Boston; Wood Pulp, K. B. Fullerton, New York; Chemical Fiber, A. G. Paine, Jr., New York; Board, Charles D. Brown; Secretary and Treasurer, Chester W. Lyman, Herkimer, N. Y.

1899-1900

President, P. C. Cheney, Manchester, N. H.; Vice Presidents: Writing, W. Murray Crane; Wrapping, C. A. Dean, Boston, Mass.; Book, M. M. Armstrong, New York; Chemical Fiber, George P. Hammond, Yarmouthville, Me.; Boards, E. B. Dennison, Portland, Me.; Dealers, Frank Squier, New York; Secretary and Treasurer, C. W. Rantoul, New York.

1900-1901

President, P. C. Cheney, Manchester, N. H.; Vice Presidents: Writing, Elisha Morgan, Springfield, Mass.; Book, M. M. Armstrong, New York; News, F. H. Parks, New York; Manila and Wrapping, C. A. Dean, Boston, Mass.; Chemical Fiber, George W. Hammond, Yarmouthville, Me.; Boards, E. B. Dennison, Portland, Me.; Dealers, Frank Squier, New York; Secretary and Treasurer, C. W. Rantoul, New York.

1901-1902

President, A. C. Hastings, Niagara Falls, N. Y.; Vice Presidents: Writing, W. N. Caldwell, Springfield, Mass.; Book, C. W. Rantoul, New York; News, G. W. Knowlton, Watertown, N. Y.; Manila and Wrapping, John S. Riegel, New York; Chemical Fiber, John G. Luke, New York; Boards, C. S. Merrill, Albany, N. Y.; Dealers, J. B. Forsyth, Boston, Mass.; Secretary and Treasurer, J. Sanford Barnes, New York.

1902-1903

President, A. C. Hastings, Niagara Falls, N. Y.; Vice Presidents: Writing, W. N. Caldwell, Springfield, Mass.; Book, C. W. Rantoul, New York; News, G. W. Knowlton, Watertown, N. Y.; Manila and Wrapping, John S. Riegel, New York; Chemical Fiber, John G. Luke, New York; Boards, C. S. Merrill, Albany, N. Y.; Dealers, J. B. Forsyth, Boston, Mass.; Secretary and Treasurer, J. Sanford Barnes, New York.

1903-1904

President, George W. Knowlton, Watertown, N. Y.; Vice Presidents: Writing, B. D. Rising, Housatonic, Mass.; Book, George E. Bardeen, Otsego, Mich.; News, J. Sanford Barnes, New York; Manila and Wrapping, Frank Grubb, New York; Chemical Fiber, Frederick Bertuch, New York; Boards, James A. Roberts, Albany, N. Y.; Dealers, J. Richard Carter, Boston, Mass.; Secretary and Treasurer, Arthur E. Wright, New York.

1904-1905

President, George W. Knowlton, Watertown, N. Y.; Vice Presidents: Writing, R. L. McElwain, Springfield, Mass.; Book, George E. Bardeen, Otsego, Mich.; News, J. Sanford Barnes, Jr., New York; Manila and Wrapping, Frank Grubb, New York; Chemical Fiber and Wood Pulp, Frederick Bertuch, New York; Boards, James A. Roberts, New York; Dealers, J. Richard Carter, Boston, Mass.; Tissue, W. O. Ball, Watertown, N. Y.; Secretary and Treasurer, A. E. Wright, New York.

1905-1906

President, W. N. Caldwell, Holyoke, Mass.; Vice Presidents: Writing, Charles McKernon, Housatonic, Mass.; Book, Geo. T. Keyes, East Pepperel, Mass.; News, David S. Cowles, New York; Manila and Wrapping, James Rogers, Ausable Forks, N. Y.; Chemical Fiber, Theo. P. Burgess, Boston; Boards, R. B. McEwen, New York; Dealers, C. F. M. Smith, Chicago; Tissue, W. O. Ball, Carthage, N. Y.; Secretary and Treasurer, Adam Luke, New York.

1906-1907

President, W. N. Caldwell, Holyoke, Mass.; Vice Presidents: Writing, A. B. Daniels, Adams, Mass.; Book, James N. Mohr, Reading, Pa.; News, H. J. Brown, Portland, Me.; Manila and Wrapping, Charles A. Dean, Boston, Mass.; Chemical Fiber, C. E. Bush, Ticonderoga, N. Y.; Boards, A. H. Ivins, Bogota, N. J.; Tissue, E. C. Robertson, Hinsdale, N. H.; Secretary and Treasurer, Adam Luke, New York.

50 YEARS OF PROGRESS 1878-1927

1907-1908

President, David S. Cowles, New York; Vice Presidents: Writing, A. B. Daniels, Adams, Mass.; Book, A. G. Paine, Jr., New York; News, C. H. Remington, Watertown, N. Y.; Manila and Wrapping, E. P. Lindsay, Boston, Mass.; Pulp, George M. McKee, Hinckley, N. Y.; Boards, A. H. Ivins, Bogota, N. J.; Tissue, E. C. Robertson, Hinsdale, N. H.; Secretary and Treasurer, Louis Chable, New York.

1908-1909

President, David S. Cowles, New York; Vice Presidents: Writing, C. M. Burnett, Turners Falls, Mass.; Book, A. G. Paine, Jr., New York; News, C. H. Remington, Watertown, N. Y.; Manila and Wrapping, E. P. Lindsay, Boston, Mass.; Pulp, George M. McKee, Hinckley, N. Y.; Boards, H. L. Paddock, Fulton, N. Y.; Tissue, E. C. Robertson, Hinsdale, N. H.; Secretary and Treasurer, Louis Chable, New York.

1909-1910

President, Arthur C. Hastings, Niagara Falls, N. Y.; Vice President, George F. Steele, Nekoosa, Wis.; Secretary and Treasurer, Louis Chable, New York; Members of Executive Council: News, Frank J. Sensenbrenner, Neenah, Wis.; Wrapping, George W. Sisson, Jr., Potsdam, N. Y.; Chemical Pulp, George M. McKee, Hinckley, N. Y.; Book, David L. Luke, New York; Writing, A. W. Esleeck, Turners Falls, Mass.; Tissue, W. O. Ball, Carthage, N. Y.; Pulp Board, H. Lester Paddock, Fulton, N. Y.; Ground Wood Pulp, David M. Anderson, Watertown, N. Y.; Bag Paper, Frank L. Moore, Newton Falls, N. Y.; Pulp Wood, Maurice Hoopes, Glens Falls, N. Y.

1910-1911

President, Arthur C. Hastings, Niagara Falls, N. Y.; Vice President, George F. Steele, Nekoosa, Wis.; Secretary and Treasurer, C. I. McNair, Cloquet, Minn.; Members of Executive Council: News, Frank J. Sensenbrenner, Neenah, Wis.; Wrapping, George W. Sisson, Jr., Potsdam, N. Y.; Chemical Pulp, George M. McKee, Hinckley, N. Y.; Book, David L. Luke, New York City; Writing, A. W. Esleeck, Turners Falls, Mass.; Tissue, W. O. Ball, Carthage, N. Y.; Pulp Board, H. Lester Paddock, Fulton, N. Y.; Ground Wood Pulp, David M. Anderson, Watertown, N. Y.; Bag Paper, Frank L. Moore, Newton Falls, N. Y.; Pulp Wood, Maurice Hoopes, Glens Falls, N. Y.; Specialties Division, H. W. Ellerson, Richmond, Va.

1911-1912

President, Arthur C. Hastings, Niagara Falls, N. Y.; Vice President, George F. Steele, Port Edwards, Wis.; Secretary and Treasurer, C. I. McNair, Cloquet, Minn.; Asst. Secretary-Treasurer, Arthur G. Maury; Members of Executive Council: News, Frank J. Sensenbrenner, Neenah, Wis.; Wrapping, Henry W. Stokes, Philadelphia, Pa.; Chemical Fiber, Thos. Hunter, Fulton, N. Y.; Book, Arthur L. Pratt, Kalamazoo, Mich.; Writing, W. D. Judd, South Hadley Falls, Mass.; Tissue, E. R. Redhead, Fulton, N. Y.; Board, R. C. Richardson, Lockland, O.; Ground Wood Pulp, J. G. Rosebush, Combined Locks, Wis.; Wood Division, Edgar G. Barrett, New York; Specialties Division, S. A. Upham, Brownville, N. Y.

1912-1913

President, Arthur C. Hastings, Niagara Falls, N. Y.; Vice President, George F. Steele, Port Edwards, Wis.; Asst. Secretary-Treasurer, Arthur G. Maury; Members of Executive Council: News, H. J. Brown, Portland, Me.; Wrapping, Henry W. Stokes, Philadelphia, Pa.; Chemical Pulp, Thos. Hunter, Fulton, N. Y.; Book, Arthur L. Pratt, Kalamazoo, Mich.; Writing, W. D. Judd, South Hadley Falls, Mass.; Tissue, E. R. Redhead, Fulton, N. Y.; Boards, Charles R. White, Chicago; Ground Wood Pulp, Judson G. Rosebush, Appleton, Wis.; Specialties Div., S. A. Upham, Brownville, N. Y.; Coated Board, B. C. Hill, Niagara Falls, N. Y.; Coated Paper, Martin Cantine, Saugerties, N. Y.

1913-1914

President, Arthur C. Hastings, New York; Vice President, Clarence I. McNair, Cloquet, Minn.; Secretary, Chas. F. Moore, New York; Asst. Secretary-Treasurer, Arthur C. Maury, New York; Members of Executive Council: News, C. A. Babcock, Stevens Point, Wis.; Wrapping, Frank L. Moore, Watertown, N. Y.; Chemical Pulp, Thomas Hunter, Fulton, N. Y.; Book, A. G. Paine, Jr., New York; Writing, C. A. Crocker, Holyoke, Mass.; Tissue, E. C. Robertson, Hinsdale, N. H.; Board Div., F. S. Harrison, Halltown, W. Va.; Ground Wood, E. A. Merritt, Jr., Potsdam, N. Y.; Coated Board, B. C. Hill, Niagara Falls, N. Y.; Coated Paper, Martin Cantine, Saugerties, N. Y.

1914-1915

President, Frank L. Moore, Watertown, N. Y.; Treasurer, Arthur G. Maury, New York; Statistician, A. J. Stewartson, New York; Executive Committee: Wrapping, H. H. Bishop, New York; L. M. Alexander, Port Edwards, Wis.; Geo. C. Bayless, Austin, Pa.; Geo. E. Crafts, Bangor, Me.; Allan M. Fletcher, Alpena, Mich.; M. E. Marcuse, Richmond, Va.; Tissue, Frank N. Stevens, North Hoosick, N. Y.; W. R. Hobbie, Greenwich, N. Y.; Board, C. E. Williams, Pierpont, N. Y.; F. S. Harrison, Halltown, W. Va.; Pulp, E. W. Kieffer, Port Huron, Mich.; Frederick McNicholl, New York; T. J. Stevenson, Montreal, Canada; News, P. T. Dodge, New York; J. A. B. Cowles, New York; Maurice A. Hoopes, Glens Falls, N. Y.; Writing, C. A. Crocker, Holyoke, Mass.; F. J. Sensenbrenner, Neenah, Wis.; E. H. Behrend, Erie, Pa.; E. H. Naylor, New York; Book, Charles F. Moore, New York.

1915-1916

President, Frank L. Moore, Watertown, N. Y.; Vice President, F. J. Sensenbrenner, Neenah, Wis.; Secretary-Treasurer, A. D. Naylor, New York; Statistician, A. J. Stewartson, New York; Executive Committee: Wrapping, H. H. Bishop, New York; L. M. Alexander, Port Edwards, Wis.; Geo. C. Bayless, Austin, Pa.; Geo. E. Crafts, Bangor, Me.; Allan M. Fletcher, Alpena, Mich.; M. E. Marcuse, Richmond, Va.; Tissue, Frank L. Stevens, North Hoosick, N. Y.; E. H. Naylor, New York; Pulp, E. W. Kieffer, Port Huron, Mich.; Frederick McNicholl, New York; T. J. Stevenson, Montreal, Canada; News, P. T. Dodge, New York; J. A. B. Cowles, New York; Maurice A. Hoopes, Glens Falls, N. Y.; Writing, Arthur B. Daniels, Adams, Mass.; W. E. Stuart, Neenah, Wis.; Arthur C. Hastings, Holyoke, Mass.; E. H. Naylor, New York; Book, Charles F. Moore, New York.

1916-1917

President, Arthur B. Daniels, Adams, Mass.; Vice President, Frank L. Moore, Watertown, N. Y.; Vice President, F. J. Sensenbrenner, Neenah, Wis.; Secretary and Treasurer, A. D. Naylor, New York.

1917-1918

President, Arthur B. Daniels, Adams, Mass.; Vice President, Frank L. Moore, Watertown, N. Y.; Vice President, L. M. Alexander, Port Edwards, Wis.; Secretary and Treasurer, A. D. Naylor, New York.

1918-1919

President, George W. Sisson, Jr., Potsdam, N. Y.; Vice President, Frank L. Stevens, North Hoosick, N. Y.; Vice President, L. M. Alexander, Port Edwards, Wis.; Secretary and Treasurer, L. B. Steward, New York.

1919-1920

President, George W. Sisson, Jr., Potsdam, N. Y.; Vice President, Frank L. Stevens, North Hoosick, N. Y.; Vice President, Arthur H. Nevius, West Carrollton, Ohio; Secretary and Treasurer, L. B. Steward, New York.

1920-1921

President, George W. Sisson, Jr., Potsdam, N. Y.; Vice President, Frank L. Stevens, North Hoosick, N. Y.; Vice President, Arthur H. Nevius, West Carrollton, O.; Secretary and Treasurer, Hugh P. Baker, New York; Counsellor, Henry A. Wise, New York.

1921-1922

President, W. J. Raybold, Housatonic, Mass.; Vice President, H. W. Stokes, Philadelphia, Pa.; Vice President, A. L. Pratt, Kalamazoo, Mich.; Secretary and Treasurer, Hugh P. Baker, New York; Counsellor, Henry A. Wise, New York.

1922-1923

President, W. J. Raybold, Housatonic, Mass.; Vice President, H. W. Stokes, Philadelphia, Pa.; Vice President, A. L. Pratt, Kalamazoo, Mich.; Secretary and Treasurer, Hugh P. Baker, New York.

1923-1924

President, Henry W. Stokes, Philadelphia, Pa.; Vice President (Eastern), Norman W. Wilson, Erie, Pa.; Vice President (Western), Walter R. Randall, Hamilton, O.; Secretary, Hugh P. Baker, New York.

1924-1925

President, Henry W. Stokes, Philadelphia, Pa.; Vice President (Eastern), Norman W. Wilson, Erie, Pa.; Vice President (Western), Alex. G. Gilman, Kalamazoo, Mich.; Secretary and Treasurer, Hugh P. Baker, New York.

1925-1926

President, Norman W. Wilson, Erie, Pa.; Vice President, Alex. G. Gilman, Kalamazoo, Mich.; Vice President, D. C. Everest, Rothschild, Wis.; Secretary and Treasurer, Hugh P. Baker, New York.

1926-1927

President, Norman W. Wilson, Erie, Pa.; Vice President, Alex. G. Gilman, Kalamazoo, Mich.; Vice President, D. C. Everest, Rothschild, Wis.; Secretary and Treasurer, Hugh P. Baker, New York.

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50 YEARS OF PROGRESS 1878-1927

Founded 1847-Incorporated 1877

THE late Seth Wheeler, president of the A. P. W. Paper Co. until his death in 1925, was granted a patent on the first machine to produce perforated roll paper in July, 1871, and began manufacturing in 1874. This machine was originally used to convert wrapping paper rolls and printed the dealer's name on each perforated sheet, but it was soon adapted to run toilet tissue rolls and remained in operation until 1908. The A. P. W. Paper Co. was incorporated in 1877.

A. P. W. Paper Co., Albany, N.Y.

Operating

A. P. W. PULP & POWER CO., LTD.

Manufacturers of Ground Wood Pulp

SHEET HARBOUR, NOVA SCOTIA

Old Established Firms in the Paper Industry

THE PAPER INDUSTRY gladly approved the opportunity offered by the American Paper and Pulp Association's celebration of its Golden Jubilee to present a series of historical sketches dealing with the progress and development of the paper industry in the United States and Canada as set forth in the history of firms that could trace their origin back to a period earlier than 1878, when the American Paper and Pulp Association was founded, and these are published in the present issue.

The interval between 1878 and 1927 is a comparatively short period of time as years ago, and there is at least one paper trade association still functioning which antedates the American Paper and Pulp Association; for the Writing Paper Manufacturers' Association enjoys the distinction of being not only the oldest paper trade association, but it is at the same time the oldest trade guild in the United States, which is most appropriate in connection with the fact that papermaking belongs among the oldest of the arts and crafts.

In the historical sketches of papermaking firms which we are reproducing in this issue of THE PAPER INDUSTRY, there are included the names of firms that have passed the century mark, and at least one firm that is able to trace its descent continuously for 128 years. The record is one of absorbing contemporaneous interest. In few other industries is it possible to find a really progressive application of modern inventions side by side with the retention of many primitive devices and processes.

In the sketches of allied business concerns that were active half a century ago, a more complete account is given of the paper mill machinery, equipment and supply firms catering to the pulp and paper industry than has ever previously been brought together within the covers of a paper trade periodical. Each of the histories has an interest of its own and is well worth study.

In addition to being live and going concerns when the American Paper and Pulp Association began to function in 1878, some of the firms whose histories are set forth here had their roots in the early days of the Republic, or go farther back to the days of Queen Anne, when our country was still a colony of Great Britain.

It is curious to trace the connection between certain arts and crafts with the development of papermaking in the United States. The purveyors of rags and similar raw material were, of course, among the first to be identified directly with the industry, with the leather tanners and manufacturers of leather belting a close second. It is easy to trace the progress and development of papermaking in the United States in the rise of industries that were engaged in supplying material and apparatus, though in the case of electrical appliances and the application of electricity as motive power, these belong clearly among twentieth century inventions and developments to be included among our fifty-year-old industries.

A. P. W. Paper Company

SETH WHEELER, for many years president of the A. P. W. Paper Company, Albany, N. Y., was granted a patent in 1871 on a roll of wrapping paper divided into sheets by perforations, as a new article of manufacture, and the machine then used was in daily operation until 1908. Originally designed to handle heavy wrapping paper, it was later adapted to run tissue or toilet paper. While the manufacture of wrapping and toilet paper was started in a small way by Mr. Wheeler, the A. P. W. Paper Company (Albany Perforated Wrapping Paper Company) was not incorporated until 1877. The company is not only the originator of the roll form of toilet paper, but is the largest converter and operates the largest mill in the world devoted wholly to the manufacture of toilet tissue and towel papers.

The history of the A. P. W. Paper Company is one of continual growth and expansion. In 1883, the company purchased a building and used it for a short time before disposing of it to the Delaware Hudson Railroad Company and purchasing the block and buildings bounded by four streets in Albany, where it remained until 1916, when a new and modern factory building was constructed to accommodate the growing business. Meanwhile, branches had been established in other cities, the first branch factory being started at Plattsburgh, N. Y. In the early part of the World War, difficulty was experienced in obtaining a sufficient supply of paper and the company decided to build its own paper mill, the first mill containing four 84-inch paper machines being started in the spring of 1918. This mill was producing paper nine months later. In 1919, a second paper mill of four machines and a pulp mill was built. The raw material problem was solved to some extent by the purchase of a large tract of timberland in the State of Vermont.

The main office of the A. P. W. Paper Company is located at Albany, N. Y., and branch offices are maintained in every large city throughout the country.

The Adams Bag Company

THE Adams Bag Company, Chagrin Falls, Ohio, is one of the oldest concerns of its kind in the United States, dating from 1858 when the firm of Adams & Co. bought the property of the Lake Erie Paper Company in Chagrin Falls, and after making necessary changes began the manufacture of manila rope paper. Paper flour sacks were made in an adjoining bag factory and sent to the bag factory of Adams, Jewett & Co., a subsidiary of Adams & Co. in Cleveland, for stamping with the various brands used by the flour milling trade. The Adams Bag Company was incorporated in 1898, after Adams & Co., had gone into the hands of a receiver, Luther Allen, of Cleveland, who had been influential in placing the affairs of the company in good shape and had assumed control.

E. B. Allen and Kenneth L. Allen became sole owners in 1914 and have continued to manage its affairs as president and vice president respectively until the present time.

The mill of the Adams Bag Company at Chagrin Falls is on the north bank of the Chagrin river and the company owns the land on both banks of the river for a mile above the mill. Plans are under way for a further enlargement of the plant.

Last year the Adams Bag Company became affiliated with the Chase Bag Company and added considerably to its interests thereby, as the Chase Bag Company is one of the oldest and largest manufacturers of cotton and burlap bags in the United States.

In addition to the officers named, Edmond Grieve is secretary and treasurer of the company. The board of directors consists of E. K. Ludington and J. F. Allen, New York; J. W. Falconer, Minneapolis; G. D. Adams, Kenneth L. Allen, H. H. Johnson and E. B. Allen, Cleveland, Ohio.

The D. M. Bare Paper Company

THE D. M. Bare Paper Company, Roaring Spring, Pa., dates from 1865 when the idea of starting a paper mill at Roaring Spring was conceived by John Eby, John Morrison, and D. M. Bare. Before the mill was built and started in April, 1866, Isaac Bowers was added to the list of partners. A boiler explosion caused a shut-down of the mill for several months and as if this was not enough misfortune, the whole plant was burned down in October of the same year. It was decided to rebuild. In the meantime John Eby, its general manager, died, but the work of rebuliding continued and the mill was again started in 1867, with John Morrison as general manager. Until 1878, a period of eleven years, the mill was run with only one machine. In that year a second and larger machine was installed.

In 1873, the daily production of book paper amounted to 1,860 lb. which sold at 9c to 10c per lb. In 1877 the pro-

Just About Records

THE L. L. BROWN mills were established in 1849,—more than three-quarters of a century ago. The founders chose as their special field the manufacture of the highest grades of ledgers, linens and bonds. For their raw materials, they would permit the use of none but *white* rags, long recognized as the only kind of rags from which papers of permanent quality can be made. Today, seventy-eight years later, these mills make none but papers of supreme qualities and use none but *white* rags.

——rather a unique record even for mills specializing in records!

This company congratulates the American Paper and Pulp Association on reaching its 50th year of constructive service.

L.L.BROWN MILLS are the *only* mills making ledger, linen and bond papers and using none but WHITE rags

Special orders requiring ledger, linen and bond papers of the highest quality receive careful and prompt attention.

L. L. BROWN PAPER COMPANY ADAMS MASSACHUSETTS

OFFICES: NEW YORK, CHICAGO, SAN FRANCISCO, LOS ANGELES

L.L. BROWN'S

Ledger, Linen and Bond Papers

[SUPREME IN QUALITY SINCE 1849]

BROWN'S LINEN LEDGER *White, buff, blue*	ADVANCE LINEN LEDGER *White, buff, blue*	GREYLOCK LINEN LEDGER *White, buff, blue*	GREYLOCK LINEN LEDGER *with Brown's Flexible Hinge for loose leaf Books*	BROWN'S FINE *White, buff, blue, pink*	BROWN'S LINEN *Cream, blue; wove, laid*
ADVANCE BOND *White, buff, blue, pink*	GREYLOCK BOND *White*	BROWN'S LINEN TYPEWRITER PAPERS	ADVANCE AND GREYLOCK TYPEWRITER PAPERS	BROWN'S MANUSCRIPT COVERS	

1849 L.L.B. 1927

50 YEARS OF PROGRESS 1878-1927

duction rose to 4,500 lb. and the selling price was then 7¼c. In 1881, with the two machines in operation, production rose to 12,300 lb., but the price of paper had settled to 5¾c.

Another machine was added in 1892, and in 1898 the mill was remodeled to increase the capacity of the pulp mill. A few years later the steam plant was rebuilt and a bleach plant was added, the company now making its own bleach. By this time, the average daily production had increased to 51,000 lb. and the price had settled down to $3.27 per 100 lb. The present average daily production of the mill is 68,000 to 70,000 lb.

In the early days of manufacture, bogus manila paper was the product. This was made from straw and gunny-bagging and sold for 9 to 10c per lb. In 1869, white paper was made from straw and rags which sold at 12c per lb. but five years later linn and poplar wood were used in making printing paper, straw pulp being employed less and less until it was abandoned in 1880.

For the past thirty years the product of The D. M. Bare Paper Company has been machine finish, supercalender and writing paper.

After the death of John Eby his interest in the mill was purchased by John Morrison and Jacob Eby and the name changed to Morrison, Bare & Co. The name was later changed to Morrison, Bare & Cass when J. K. Cass bought a fourth interest in it. This firm was dissolved in 1886 and the property divided. Morrison and Cass took the Tyrone mill and the Pittsburgh warehouse, and D. M. Bare and Jacob Eby became the owners of the Roaring Spring mill. D. R. Wike was admitted to partnership in 1886 and a year later Jacob Eby died and his interest was purchased by his surviving partners. The business was incorporated in 1907 and the present officers are E. G. Bobb, president; I. E. Garver, vice president; Clarence Hair, secretary, and Lewis Garver, treasurer.

Bird & Son

THE incorporated firm of Bird & Son, papermakers, East Walpole, Mass., has been conducted since 1795 by three generations of the Bird family. The first of these generations was represented by George Bird, who purchased waterpower and built a paper mill in Needham, Mass., in 1795 which was the starting point of the business of Bird & Son. This mill was sold in 1803 and another mill leased in Dedham. In 1817, he purchased waterpower rights and land on the Neponset river in Walpole, and the business now carried on by Bird & Son has been located on this land since that time.

The Neponset Paper Company was acquired by Francis William Bird, son of George Bird, in 1838. He formed a partnership with his father, his brother and brother-in-law which did not last long. After the firm was dissolved the business was owned and managed by F. W. Bird, which was also the firm name. Charles Sumner Bird, second son of Francis W. Bird and the present head of the firm, entered the business in 1877. Soon afterwards he was admitted a partner and the firm name became F. W. Bird & Son. The mills were destroyed by fire in 1880 and immediately rebuilt and enlarged.

The firm now known as Bird & Son was organized January 1, 1913 and incorporated in 1918. It operates paper mills at East Walpole, Mass., and Phillipsdale, R. I.; floor covering and roofing plants at Norwood, Mass., and Chicago, Ill., with box factories at East Walpole and branch offices and warehouses in every large city throughout the country.

The Beckett Paper Company

THE Beckett Paper Company, of Hamilton, Ohio, will soon record eighty years of existence, the mill as originally designed having been started in 1848, perhaps the first paper mill in operation at that time west of the Allegheny Mountains. William Beckett, the father of Thomas Beckett who died in July, 1923, was persuaded to embark in the paper business by a young Scotsman named Adam Laurie who undertook to attend to the construction of the mill and superintend its operation. It was a four-engine mill, that is, it contained two washers and two beaters. At that time they did not describe mills by the number of machines as is done now. The mill started with one machine sixty-two inches wide and was planned to make 2,000 lb. of newsprint paper a day. Later, other papers were made such as blotting, white and colored book paper, colored poster and colored cover paper. The elder Mr. Beckett, grandfather of Minor M. Beckett who is now president of the company, had engaged two millwrights, John and Frank Martin who had an interest in the enterprise, but they did not get along well together and Mr. Beckett bought them out. The business prospered and Adam Laurie became a partner in 1856. He retired and disposed of his interests to Thomas Beckett in 1887.

In a most delightful volume by Carl R. Greer and Thomas Beckett under the title *What a Buckeye Cover Man Saw in Europe*, which was issued in 1923 to commemorate the seventy-fifth anniversary of the Beckett Paper Company, interesting particulars are given of the early history of the firm and the manufacturing problems which had to be met in the days of the Civil War and afterwards. The early struggles of Thomas Beckett leading to the period when he acquired a half interest in the property and The Beckett Paper Company was incorporated, December, 1887, are told in this volume in a way to excite the interest and the sympathy of any papermaker. Mr. Beckett's relations with L. P. Clawson, of the Black-Clawson Company, form an interesting chapter. The exciting times over the building of a new mill and the installation of a big new machine with ten thirty-six-inch dryers are finely described, as well as the later period of reconstruction, panic and recovery. Mention is made in this final chapter of the book of valuable aid accorded to Mr. Beckett by H. L. Kutter, of the Black-Clawson Company.

L. L. Brown Paper Company

THE L. L. Brown Paper Company, Adams, Mass., has been established since 1849. The founders of the company were Levi L. Brown and his uncles, Daniel and William Jenks. The partnership, entered into in 1849, was known as L. L. Brown & Company. The mill in which the new enterprise began operations in those early days consisted of a small brick and wooden structure, occupying part of the site of the present main plant of the company. The productive capacity was limited to 1,000 pounds a day.

In 1871, the original mill in which L. L. Brown and his associates began operations was remodelled and greatly enlarged. Since that time both mills, now known as the Upper Mill and the Lower Mill, have been steadily augmented to keep pace with market conditions and manufacturing developments.

In 1873, the business was incorporated as the L. L. Brown Paper Company, Levi L. Brown, one of the original founders, being named president; T. A. Mole, who joined the company as bookkeeper in 1867, was made treasurer.

While the L. L. Brown Paper Company has always specialized in ledger papers, of which it makes four grades, its products also include other lines, notably linens, bonds, parchments, onion skins, exchange cap, manuscript covers and typewriter papers. For many years the firm had the distinction of being the only mills to manufacture genuine, handmade paper on a commercial basis.

The officers of the L. L. Brown Paper Company are: Arthur B. Daniels, president; A. Millard Daniels, treasurer; Rupert B. Daniels, secretary. Arthur B. Daniels has been identified with the company since 1878.

Byron Weston Company

THE Byron Weston Company, Dalton, Mass., was founded in 1863 by Captain Byron Weston who, before the Civil War, had acquired an expert knowledge of the manufacture of fine papers, in three or four of the best mills in the United States, rising while still a young man to a position of authority in mills in Lee, Mass., and Hartford, Conn. Soon after he acquired the plant at Dalton, he began the manufacture of the paper known as Weston's Linen Record. In 1886, he was elected president of the American Paper and Pulp Association, and re-elected in 1887.

In the early nineties, the business was incorporated as the Byron Weston Company and since that time the chief product of the mills has been Byron Weston Company's Linen Record.

Mr. Weston died in 1898, and his eldest son Frank Weston became the head of the business until failing health compelled

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ROLLINS ENGINE COMPANY

NASHUA, N. H., U. S. A.

50 YEARS OF PROGRESS 1878-1927

him to give up active work. Franklin Weston died in 1920, and since then Philip Weston had been in active charge as president, assisted by his brother, Donald M. Weston, as treasurer. In 1919, Brenton C. Pomeroy joined the organization as manager of sales, and in 1926 he was elected secretary, in addition to his other duties.

Philip Weston is the oldest surviving son of Byron Weston and has been actively connected with the company since 1901. Donald M. Weston has also served the company in different departments since he was graduated at Yale.

From the beginning, the Byron Weston Company has devoted its energies almost exclusively to the production of the highest grades of ledger paper.

Curtis and Brother Company

CURTIS AND BROTHER COMPANY, Newark, Del., are successors of the old firm of Curtis and Brother which dates back to 1814, and ranks the present plant among the oldest paper mills in the United States. The products of the firm today do not differ very materially from those of earlier days, book paper being still manufactured, though cover, writing and envelope paper as well as grades of writing paper are now produced. Descendants of the original owners of the mill have become well known of late years through their activities in the Technical Association of the Pulp and Paper Industry. Fred Curtis Clark is now operating the East Hartford mill at Burnside, Conn., in association with R. H. Hatch, and Frederick A. Curtis is connected with the sales department of the American Writing Paper Company. The officers of Curtis and Brother Company are Alfred A. Curtis, president; Charles N. Levis, vice-president and sales manager; R. C. Levis, secretary, and H. W. Mason, treasurer.

Courtlandt B. Griffin, Vice-President, Carew Mfg. Co.

Carew Manufacturing Company

JOSPEH CAREW established the fine paper mill of the Carew Manufacturing Company in South Hadley Falls, Mass., more than seventy-five years ago, a town which has ever since held a distinctive place in the development of fine writing paper in western Massachusetts. The early structure was of wood, and the canal, from which waterpower was obtained, was used by barges to go around the rapids and dam in carrying coal and other merchandise, from tidewater up the Connecticut river. This mill was burned in 1875 and a brick structure was built

Original Carew Mill. Built in 1848

the following year from which has developed the enlarged and modernized manufacturing plant that is standing today.

The business was acquired by John H. Southworth in the early '80's when more advanced methods were introduced and a forward impulse was begun under Mr. Southworth's influence, assisted by his sons Charles H. and E. Courtlandt Southworth. Charles H. Southworth died in 1906 and was succeeded by William D. Judd as president and general manager, the late Solomon B. Griffin being then vice-president and secretary. Courtlandt B. Griffin, a son of Solomon B. Griffin and a grandson of John S. Southworth is now director and vice-president of the company and George E. Bardwell is treasurer.

George E. Bardwell, Treasurer, Carew Mfg. Co.

Carew Manufacturing Company on Connecticut River—Holyoke dam and Mt. Tom in the distance

50 YEARS OF PROGRESS 1878-1927

Congratulations

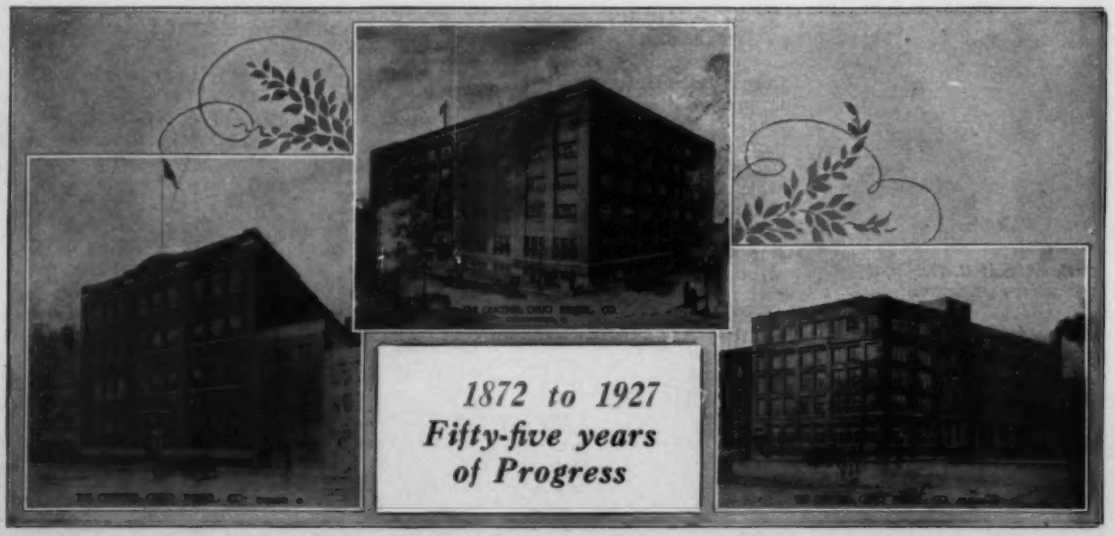
ON THIS, the Eighty-fifth Anniversary of the establishment of our Company, we are happy to congratulate the American Paper and Pulp Association on its Fiftieth Birthday, and to wish for an uninterrupted continuance of the helpful and constructive work it is carrying on for the benefit of the Paper Industry.

CHENEY BIGELOW WIRE WORKS

SPRINGFIELD, MASSACHUSETTS

Manufacturers of

FOURDRINIER AND CYLINDER WIRES, CYLINDER MOULDS, DANDY ROLLS, BRASS, BRONZE, MONEL AND STEEL WIRE CLOTH, WIRE ROOF SIGNS, OFFICE RAILINGS



The Central Ohio Paper Company

Cleveland *Columbus* *Toledo*

New York Pittsburgh Detroit Dayton Akron Wheeling Huntington Indianapolis

"Paper for Every Purpose"

50 YEARS OF PROGRESS 1878-1927

The Carew Manufacturing Company is the oldest paper mill in Connecticut Valley now in operation. It has maintained a high reputation for quality writing papers since its early days. To the surprise of visiting Englishmen in 1853 at the time of the World's Fair in New York, the first premium was awarded to the Carew Manufacturing Company. A commission of English paper manufacturers visited the mills to observe the process of manufacture that had beaten their handmade product. The specialties of the firm include Empire, Royal Seal, Lenox and Merit bond; Vulcan, Dependence and Monmouth ledgers; Kenmore Parchment and Superior Manuscript Covers.

Chapin & Gould Paper Company

CHAPIN & GOULD PAPER COMPANY, Springfield, Mass., manufacture a line of high-grade writing papers. The firm is one of the oldest in the western part of Massachusetts having been established in 1858. Charles L. Chapin is president and treasurer and Harold W. Hixon is secretary and assistant treasurer.

The Central Ohio Paper Company

FIFTY-FIVE years ago—in 1872—The Central Ohio Paper Company was established at Wall and Broad streets, Columbus, Ohio, when the city had a population of 35,000. Progressing steadily, the company has since that time moved three times into larger quarters. In 1902, The Central Ohio Paper Company opened up a division house in Cleveland, Ohio, at 1025 Oregon avenue, and later in 1920, it constructed a new fireproof warehouse at 1365 East Twelfth street, where it now has the most modern and complete paper house in the city of Cleveland.

In 1904, The Central Ohio Paper Company opened up a division house in Toledo, Ohio, at 414 Monroe street, and later, in 1916, it built a modern fireproof warehouse at 126 Ontario street, where it now carries a complete stock.

The direct interests of The Central Ohio Paper Company, of Columbus, Ohio, are in merchandising and not manufacturing paper, but Orlando A. Miller, president of the company, has been interested in the manufacture of paper for many years and has attended practically every meeting of the American Paper and Pulp Association since its organization. For many years, he was associated with the George H. Friend Paper Company at West Carrollton, Ohio, and at present is vice-president of The B. D. Rising Paper Company, Housatonic, Mass., and the West End Paper Company, Carthage, N. Y., as well as being a director in The Oswegatchie Paper Company, Natural Dam, N. Y., and The Chillicothe Paper Company, Chillicothe, Ohio. For fully fifty years he has been in close touch with both the manufacture and sale of paper.

Crane & Company

CRANE & COMPANY have been making fine papers at Dalton, Mass., since 1801, a period of 126 years. Some time in 1799, Zenas Crane established a mill on the banks of the East Branch of the Housatonic river at the point where Dalton now stands. The spot was favored by Mr. Crane and his associates because of the abundance of available waterpower, a rich supply of pure spring water and the clean surroundings. In those days rag stock was the chief raw material, the common material, of all paper. On February 8, 1801, Zenas Crane and his associates, Henry Wiswall and John Willard, began to advertise for rags, offering "a generous price."

The name "bond" as applied to paper originated with the products of the Crane Mills at Dalton. Originally, these papers were used exclusively for bonds, and the trade fell into the habit of calling them "bond" papers. In recent times, the word has come into general use to designate any paper used for business purposes.

It is one of the traditions of the trade that nothing but rags are used as raw material in the Crane mills. Its bond papers are made of new white cuttings which yield a paper characterized by crispness and toughness. The business has never changed hands during the century-and-a-quarter of its existence and the constant ambition of the firm has been to make the best paper possible. The firm has for many years supplied the paper used for engraving bank notes and government bonds, has stuck steadily to the business of making fine papers and fine papers only, so that the Crane products may be said to be in a class by themselves.

Crocker-McElwain Company

CROCKER-McELWAIN COMPANY and the Chemical Paper Manufacturing Company, Holyoke, Mass., are in the fifty-year class of paper manufacturers. Clifton A. Crocker, president of the Crocker-McElwain Company, became associated with his brother Daniel P. Crocker in the Crocker Manufacturing Company in 1877, and upon his brother's death ten years later, became treasurer and manager of the corporation. R. Franklin McElwain became associated with Mr. Crocker in 1890. The company purchased the old Albion mill adjoining their original mill in 1890, and between 1892 and 1895 these mills were consolidated by a reconstruction and enlargement into a really first-class mill of the period. The Crocker Manufacturing Company passed into the possession of the American Writing Paper Company in 1899, and Mr. Crocker and Mr. McElwain were associated with the A. W. P. Company for about three years.

The Crocker-McElwain Company was incorporated in 1904, and purchased the so-called Cabot Street mill from the Holyoke Waterpower Company and valuable waterpower connected therewith. The property was converted into a modern writing paper plant and production was started in May, 1905. This plant with subsequent additions constitutes what is now the Crocker-McElwain Company's Cabot street plant.

After the acquisition of the Chemical Paper Company in 1913 by Mr. Crocker and Mr. McElwain, a corporation was reorganized under the name of the Chemical Paper Manufacturing Company and this mill with its additions and improvements now constitutes one of the largest paper mill plants, with one of the most valuable waterpowers in the city of Holyoke.

Crocker, Burbank & Co. Association

CROCKER, BURBANK & CO. ASSOCIATION, Fitchburg, Mass., have an old and honored tradition in the history of papermaking in Massachusetts. This tradition receives mention in a splendid work of biography by William Bond Wheelwright, entitled *Life and Times of Alvah Crocker.* This book was privately printed in 1923 and is dedicated to the memory of the author's friend, Alvah Crocker, who lost his life in France during the World War.

The Crockers have been identified with papermaking since the early days of the Republic. Deacon Samuel Crocker, the father of Alvah Crocker, was connected with a paper mill in Leominster, Mass., in 1796. Leominster is almost a suburb of Fitchburg, being situated a few miles south of the town.

Alvah Crocker got employment in a paper mill at the tender age of eight years. In 1820, when nineteen years old, he went to work in a paper mill at Franklin, N. H., and stayed two years, afterwards returning to Fitchburg where he got employment with General Leonard Burbank, the first papermaker in that town. In 1826, he managed to borrow sufficient capital to acquire a mill site in West Fitchburg and start manufacturing paper by hand on his own account. In 1842, a disastrous fire destroyed the mill of A. Crocker & Co., with a loss of a large stock of paper and rags. Alvah Crocker had become a public man of some renown and the destruction of the mill property, combined with the increasing pressure of public affairs, led him to seek a partner whom he found in Gardner S. Burbank, a thoroughly practical papermaker, who was a nephew of General Leonard S. Burbank, already mentioned, and a son of Abijah who had built the first mill in Worcester County in 1775.

Gardner S. Burbank had learned his trade in Montpelier, Vt. He had already built a mill at Russell, Mass., in partnership with Cyrus W. Field and Elizur Smith, which he left to accept Mr. Crocker's offer. Mr. Burbank retired from the business in 1866. Charles T. Crocker, the only son of Alvah, was admitted to the firm in 1855 and at his father's death in 1874, he succeeded him. Crocker, Burbank & Co.'s plant then consisted of seven mills, with a total daily product of seventeen tons. Today the company has nineteen paper machines with a total daily capacity of 300 tons.

As noted by Mr. Wheelwright in his interesting account of the life and times of Alvah Crocker, there have been many

The Ripe Old Age of 94

THIS year the firm of Bulkley Dunton & Co. reaches the ripe old age of 94—almost a century.

The story of these 94 years is one of rendering satisfactory service to the paper trade. For 50 years we have been the agents for the Knox Woolen Co., Camden, Maine, manufacturers of "Excelsior" Felts for paper machines. As agents for many brands of foreign wood pulp and dealers in rags, and as paper manufacturers and jobbers the story has been the same—satisfactory service. The high character and fine business ideals that were infused into the company at its establishment in 1833, have been rigidly maintained ever since.

And it is because of this that we have been able to maintain the good will of paper merchants—it is because of this that we have been able to grow and enlarge—it is for this reason that we have reached the ripe old age of 94, giving more satisfactory service every day.

OVER NINETY YEARS IN THE PAPER TRADE B.D. & Co. ESTABLISHED 1833

BULKLEY DUNTON & CO.

75-77 DUANE STREET NEW YORK CITY

GEORGE R. WALLACE, *Pres. & Treas.* GEORGE R. WALLACE, JR., *V. P. & Mill Mgr.*
FREDERICK WALLACE, *Asst. Treas.*

Fitchburg Paper Company

FITCHBURG, MASS.
Founded 1861

Manufacturers of

Fitchburg Finish Printing Papers

Of Several Grades, Especially Adapted to

Web, Flat Bed, and Rotogravure Printing

Also of **Specialties** For

Coating Mills and Wall Paper Manufacturers

Quality Papers for Particular Purposes

Yearly Capacity—35,000 Tons

50 YEARS OF PROGRESS 1878-1927

individuals responsible for the success of the company, now known as Crocker, Burbank & Co. Association. In 1874, besides Alvah Crocker, there were actively engaged in the business George F. Fay, Samuel E. Crocker, and Charles T. Crocker and the following descendants and relatives have since that time been actively engaged in the business: Edward S. Crocker (1878-1909); George H. Crocker (1879-1909); Alvah Crocker (1880-1927); Charles T. Crocker, Jr. (1892-1927); Samuel E. M. Crocker (1903-1922); Alvah Crocker, Jr. (1904-1909); Bartow Crocker (1909-1927); Douglas Crocker (1909-1927); Alfred M. Crocker (1910-1911); Bigelow Crocker (1912-1927); C. T. Crocker, 3d (1916-1927); Weyman S. Crocker (1919-1927). Alvah Crocker is president and treasurer and Charles T. Crocker, vice-president and assistant treasurer.

Louis De Jonge & Co.

LOUIS DE JONGE & CO., coated paper manufacturers, New York, with plants at Fitchburg, Mass., and Clifton, Staten Island, N. Y., was founded in 1846, by two brothers, Julius and Louis De Jonge, so that the firm has passed its eightieth year. When the business was started, America was largely dependent upon foreign countries for supplies of fancy and coated paper, but the De Jonge brothers were convinced that similar papers could be produced here and they built a small factory at Tompkinsville, Staten Island. At this time, paper was coated entirely by hand and the process was a slow and expensive one. In 1852, William Waldron, of New Brunswick, N. J., had invented what he called a "grounding machine" for the coating of paper and this and later models were speedily added to De Jonge's growing factory equipment. The original little factory soon grew into a sizable group of buildings from which was turned out an almost endless variety of surface coated papers, including flint and friction-glazed, plated and other standard lines. From 1846 to 1873, Julius and Louis De Jonge were sole owners and proprietors. In 1873, Charles F. Zentgraf was taken on as a partner and the firm name changed to Louis De Jonge & Co.

In 1882, Louis De Jonge, Jr., was taken into the firm and assumed the management of the factory. Julius De Jonge died in 1889 and in 1892 Louis De Jonge retired from the business. In 1908, sixty-three years after the founding of the business by his brother Julius and himself, he passed away at a ripe old age. In 1905, the business was incorporated as Louis De Jonge & Co., and Charles F. Zentgraf, long the active head of the firm, was elected president, which office he held until the time of his death in 1907. Louis De Jonge, Jr., was then elected president and continued as the executive head of the business until 1910, when he was succeeded by Ernest W. Zentgraf who has held the office ever since.

Louis De Jonge & Co. maintain a factory at Clifton, Staten Island, N. Y., and a mill at Fitchburg, Mass., both of which are considered models of construction, equipment and efficiency. Charles I. McLaughlin, treasurer of the company, is an expert in credits; Alfred De Jonge, secretary, is the active head of the Clifton factory, where Dr. Robert Krause is technical director and chief chemist.

C. H. Dexter & Sons

C. H. DEXTER & SONS, Windsor Locks, Conn., dates from 1767, when a saw mill was started there by Seth Dexter. In 1833, Charles H. Dexter began to experiment in the manufacture of paper from manila rope and his enterprise was so successful that in 1840 a frame building was erected in which the present business was begun under the firm name of C. H. Dexter & Co. C. H. Dexter's son Edward D. and his sons-in-law B. R. Allen and Herbert R. Coffin were admitted to partnership in 1867 when the firm name was changed to C. H. Dexter & Sons. C. H. Dexter died in 1869 but the business was continued by Edward D. Dexter and Herbert R. Coffin. The original mill was destroyed by fire and a new mill erected in 1875. The last of the Dexters, Edwin D., passed away in 1886 and the business devolved upon Mr. Coffin who assumed full ownership of the property and continued the old firm name.

After Mr. Coffin's death in 1901, his sons Arthur D. and Herbert R. took charge. In 1914, incorporation was effected with Arthur D. Coffin, president; Herbert R. Coffin, vice-president, and Charles H. Coye, secretary. Mr. Coye who had been associated with the Dexter Company for forty-nine years, died in his seventy-third year on February 12, 1927.

The early output of the mill was rope wrapping and strong specialty papers but of late years the mill has specialized on high-grade thin papers, as Dexstar manifolds, carbonizing, condenser, star tissues. A larg red star is the trademark of the firm and their plant is known as the star mills. Recently C. H. Dexter & Sons, Inc., adopted the trade-name Dexstar as a trademark.

East Hartford Manufacturing Company

EAST HARTFORD MANUFACTURING COMPANY, Burnside, Conn., has a history resembling that of a number of other old New England paper concerns. The site of the mill was first occupied by a saw mill in 1669 and later as a grist mill. Some time between 1730 and 1780 a paper mill was erected there, which in 1805 passed into the hands of Barzillia Hudson and George Goodwin who later sold it to others until the East Hartford Manufacturing Company was incorporated under a Connecticut charter dated August 17, 1865. In the early days nothing but handmade paper was manufactured, a record book of 1817 showing a series of papers like vellum writing, laid writing, Bible paper and bank note paper; printing paper was also made. In 1878, A. W. Eaton, now president of Eaton, Crane and Pike, was secretary of the company and built up a large business in papeteries, which were manufactured, folded and boxed at the mill. L. S. Forbes entered the firm as treasurer in 1883 and in 1887 was elected president, which office he held until the mill was sold to Raymond S. Hatch and Frederick C. Clark in 1926.

The mill is picturesquely situated, and retains many of the architectural features of the original plant. The present building, constructed of native stone, is one of the old units of the handmade paper mill. It has been operated as a paper mill continuously since 1870 and many relics of the old days of handmade paper manufacture exist, including hand molds and machines used by the early operators for weaving their own wire cloth.

Fitchburg Paper Company

THE Fitchburg Paper Company was started in 1865 by Rodney Wallace who associated with him others who at that time were engaged in the business of selling paper stock and cotton waste. The business prospered and Mr. Wallace bought out his partners and became sole owner in 1869. A new mill was built in 1878 and the daily product brought up from two tons to seven tons. In 1879, Mr. Wallace's two sons, Herbert and George, were admitted to partnership. By 1894, one other mill had been built and the product reached fifteen tons a day. In 1903, the first mill was totally destroyed by fire and a modern mill was erected in its place. In 1910, Mill No. 4, with two machines, was built, and in 1919 an addition with a 156-inch machine was completed.

The plant now incorporated as the Fitchburg Paper Company has a production of 125 tons daily. Seven machines are operated, the product being English-finish book papers, foundation stock for coating, glazing and lithographing and special hanging papers. The business is conducted by Rodney Wallace's descendants, George R. Wallace, who is president and treasurer, and George R. Wallace, Jr., vice-president; M. F. Dunn, secretary, and Frederick Wallace, assistant treasurer.

Fort Orange Paper Company

FORT ORANGE PAPER COMPANY, Castleton on Hudson, N. Y., dates from a paper mill erected there in 1858 by Charles Van Benthuysen, who operated it until July, 1881, when the concern was incorporated as the Fort Orange Paper Company. Print paper was made originally and later the mill was converted into a plant for the production of government postal cards. For several years past, the company has been engaged in the manufacture of boxboard and folding boxes, for which the mill is ideally located. The plant and executive offices of the Fort Orange Paper Company are at Castleton on Hudson, N. Y., with branch offices 475 Fifth avenue, New York, and 6 Beacon street, Boston. The officers are Peter C. Brashear, president; W. Gordon Latham, vice-president; Robert S. Harris, secretary and William P. Sawyer, treasurer.

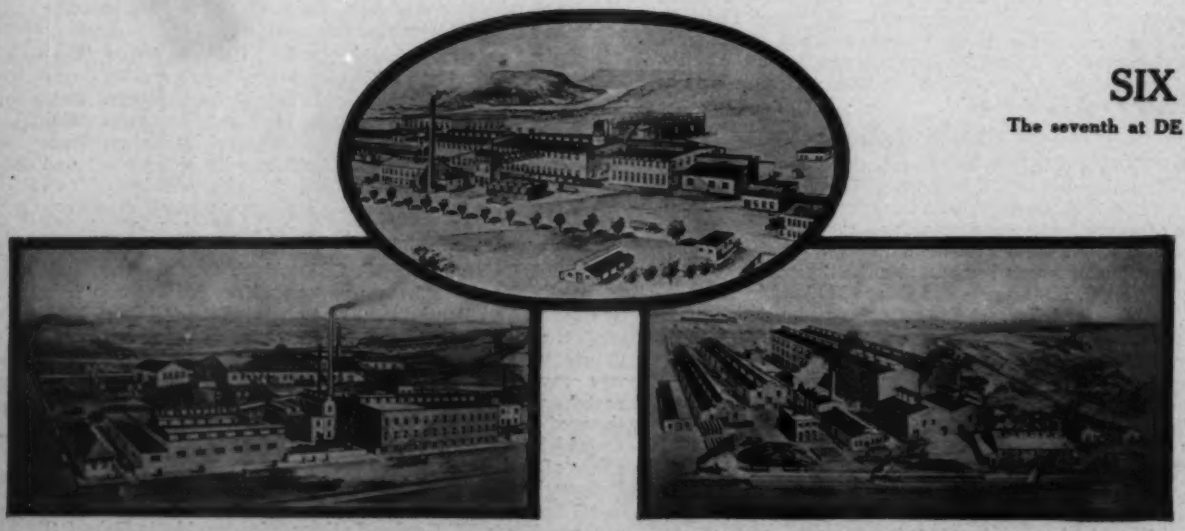
Symbol of *Quality*

SYMBOL of QUALITY
KALBFLEISCH
CHEMICALS
FOR NEARLY A CENTURY

THE name of Kalbfleisch has been associated with dependable chemicals for nearly 100 years.

The tradition of quality in chemicals, of placing service on a basis of complete satisfaction to our customers, has been a rigid policy since the first plant to bear the Kalbfleisch name was established in 1829.

ROSIN SIZE—Drums or Tank Cars
SULPHATE OF ALUMINA—Commercial and Iron Free
SATIN WHITE
CASEIN—Domestic and Imported
CHINA CLAY
SALT CAKE
SODA ASH AND ALKALIES
AMMONIA
ACIDS—Muriatic, Sulphuric, Nitric, and Other Chemicals



SIX FAC
The seventh at DE QUINCY,

Brooklyn, N. Y. Kalamazoo, Mich. Erie, Pa.

50 YEARS OF PROGRESS 1878-1927

for nearly a century

Kalbfleisch plants are favorably located in various parts of the country. There are six now in operation, supplying paper manufacturers with dependable chemicals. A seventh plant, now under construction at De Quincy, Louisiana, will offer Southern and Western paper mills a convenient source of supply for Rosin Size.

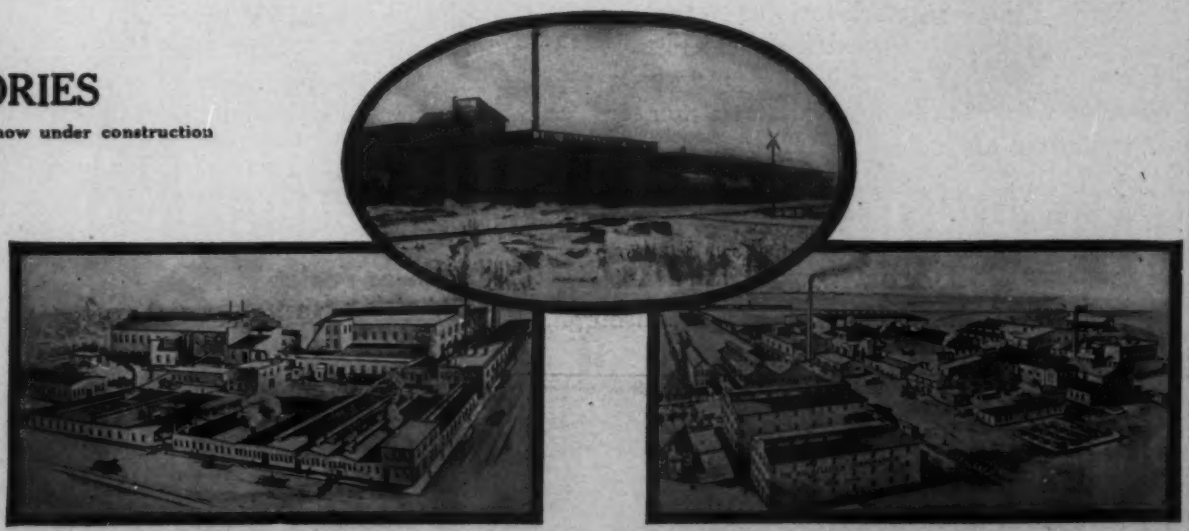
Through ability to satisfactorily supply your needs the Kalbfleisch Corporation has come to be known as Headquarters for Chemicals of quality and dependability, well serviced.

During the many decades we have been in business we have been working in the interest of paper manufacturers to give them dependable chemicals.

The
KALBFLEISCH
Corporation

200 FIFTH AVENUE, NEW YORK CITY

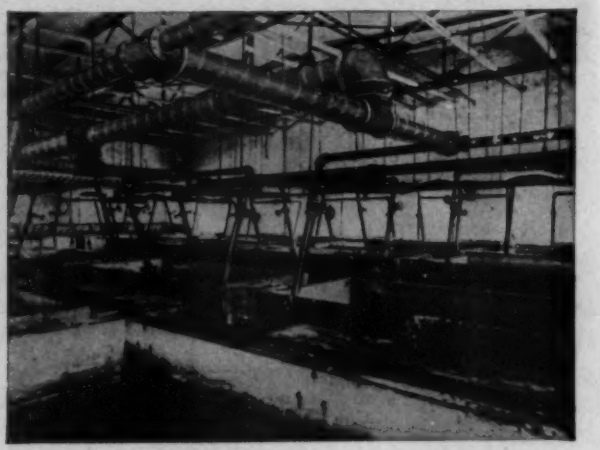
TORIES
LA., now under construction



Elizabeth, N. J. Chattanooga, Tenn. Waterbury, Conn.

50 YEARS OF PROGRESS 1878-1927

A 30-inch water supply line in paper mill service



Root galvanized pipe in beater room of paper mill. Its light weight simplifies overhead suspension

60 Years of Pipe Making

INTO each section of Root Spiral Riveted Pipe are put the benefits of over 60 years of experience. The Abendroth & Root Manufacturing Co. have been making this pipe since early in 1867.

Knowing this, it is only natural that paper makers should turn to Root pipe to supply their needs. It is a familiar product in paper mills. Its many advantages and easy adaptability are widely known.

Inside the mill it is employed to convey water to grinders, stock to jordans, beaters and paper machines, and for many miscellaneous purposes. It will carry pure water, waste water, hot liquids, exhaust steam, or pulverized coal.

Outside the mill, Root pipe is found efficient and economical for conveying water above or below ground, often over considerable distances.

The extremely light weight of Root pipe, which reduces suspended pipe weight by at least two-thirds, is a very important factor to mill men. But it is the ease with which this pipe can be put together, the perfect combination of light weight and rigidity, the perfected joints and durable coatings, that make paper makers turn to Root Spiral Riveted Pipe as the perfect paper mill piping system.

The fruits of this experience of over 60 years are yours for the asking. Write for particulars.

ABENDROTH & ROOT MANUFACTURING CO.

233 Broadway **New York, N. Y.**

Chicago, Ill. **Pittsburgh, Pa.** **Mexico City**

Hampshire Paper Company

HAMPSHIRE PAPER COMPANY, South Hadley Falls, Mass., is more than sixty years old, being an outgrowth of the Glasgow Paper Company which was established in South Hadley Falls in 1864. The plant was sold to the Hampshire Paper Company in 1866 and the business was incorporated in May of that year by the late John H. Southworth and his associates. The company was directed by Mr. Southworth and his son until 1906, and under them the business prospered and expanded. It was under the leadership of Charles H. Southworth that the Hampshire Paper Company began to conduct an aggressive sales campaign for the distribution of Old Hampshire Bond and this policy of national advertising has continued ever since. The Hampshire Paper Company was one of the first mills to establish resale prices on its papers. Associated in management with W. D. Judd, present president of the company, is Constant Southworth, treasurer, son of the late Charles H. Southworth and grandson of the founder of the Hampshire Paper Company.

P. H. Glatfelter Co.

P. H. GLATFELTER COMPANY, Spring Grove, Pa., occupies the site of a paper mill that was operated by Jacob Hauer in 1851. This mill came into the possession of Philip H. Glatfelter in 1863. Straw was the principal raw material from which pulp was made and the total production of paper amounted to 1,500 lb. daily. This was gradually increased in five years to 4,000 lb.

The present mill of P. H. Glatfelter Company began to take form in 1874. Entirely new equipment was provided, consisting of a fourdrinier machine of Rice, Barton & Fales make, 82 inches in width, two beating engines, two washing engines and one jordan refiner. By 1880, the business of the company had increased to such an extent that another fourdrinier and additional equipment was ordered from the Pusey and Jones Company, this machine, 102 inches in width, being the widest and fastest running paper machine yet built. George W. Childs, of the Philadelphia Public Ledger, had just installed the world's largest Hoe presses and the only paper mill in the country equipped to make 94-inch rolls was the Spring Grove mill.

Wm. D. Judd,
President, Hampshire Paper Co.

In 1881, a soda pulp plant was added and by the addition of more machinery the production of paper was increased to about 60,000 lb. a day. Until this time the product of the mill was news, colored book, No. 2 book and manila. The manufacture of newsprint paper was discontinued in 1895; since that time the output of the mill has consisted entirely of No. 1 machine finish and supercalender book papers, bond, writing, mimeograph, blank book and lithograph papers. Improvements and additions to the mill have brought the daily capacity to 100 tons of paper and 50 tons of pulp. The present officers of the P. H. Glatfelter Company are W. L. Glatfelter, president; C. G. Moul, vice-president; P. H. Glatfelter, secretary and treasurer; M. J. Kelley, general manager and W. S. McClellan, assistant general manager.

Hollingsworth & Whitney Co.

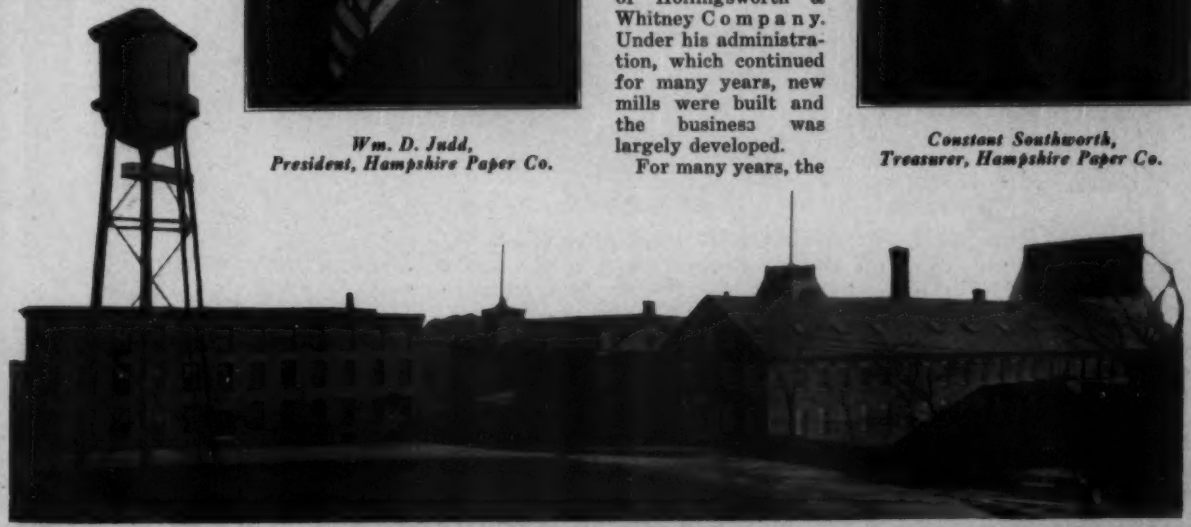
THE Hollingsworth & Whitney Company started business in 1862 with the operation of mills at South Braintree, Mass., and Watertown, Mass., by E. A. Hollingsworth and Leonard Whitney, Jr., in partnership as Hollingsworth & Whitney. Both Mr. Hollingsworth and Mr. Whitney had previously been engaged for a number of years in the manufacture of paper. The mills of Mr. Hollingsworth had been located at South Braintree, Mass.; the paper mill and bag factory of Mr. Whitney were in Watertown, Mass. The first machine-made paper bags in America were manufactured by Mr. Whitney at Watertown in 1857.

E. A. Hollingsworth was a son of Mark Hollingsworth who operated paper mills on the Neponset river below Mattapan in 1801. Lyman Hollingsworth, a brother of E. A. Hollingsworth, was the first manufacturer of manila paper, which he made from old rope at South Braintree about 1843.

In 1875, Hollingsworth & Whitney acquired paper mills at Gardiner, Maine. In 1882, the business was incorporated and Charles A. Dean became vice-president and general manager of Hollingsworth & Whitney Company. Under his administration, which continued for many years, new mills were built and the business was largely developed.

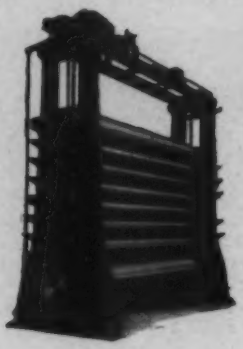
Constant Southworth,
Treasurer, Hampshire Paper Co.

For many years, the



Hampshire Paper Co., South Hadley Falls, Mass.

50 YEARS OF PROGRESS 1878-1927



LOBDELL

We congratulate the American Paper and Pulp Association on the attainment of its golden anniversary.

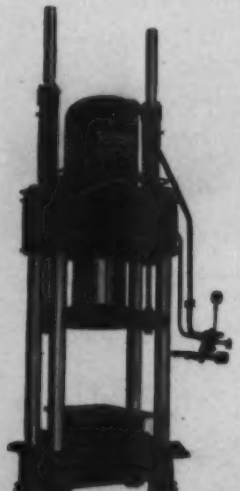
It is a privilege that we highly esteem to have served this wonderful industry for more than fifty years.

LOBDELL CAR WHEEL COMPANY

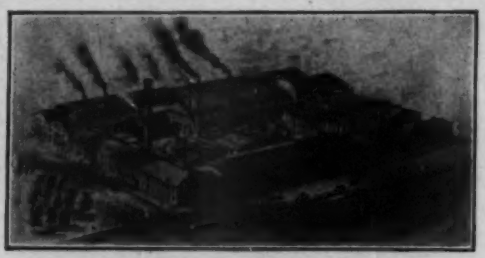
Established 1836

WILMINGTON, DELAWARE

NINETY-ONE YEARS' EXPERIENCE IS EMBODIED IN EVERY SOUTHWARK PRODUCT



800 Ton Pulp Press



ESTABLISHED 1836

SOUTHWARK Standard Hydraulic Pulp Dehydrating Presses are in active service in the largest Pulp and Paper Mills throughout the United States and Canada.

Where special presses are required, we have every facility for their proper design and construction.

Baling Press
All Types and Capacities

SOUTHWARK FOUNDRY AND MACHINE CO.

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343 S. Dearborn St.

50 YEARS OF 1878-1927 PROGRESS

manufacture of paper bags was an important part of the business of Hollingsworth & Whitney Company but the paper bag business was finally sold in order that the attention of the management might be devoted exclusively to the development of paper manufacture.

The increased use of woodpulp in papermaking made it advisable to develop more extensively in Maine, and in 1893, new mills were started at Winslow, Me., which produced both woodpulp and paper. In 1907, the construction of another pulp mill was started at Madison, Me.

The company has extensive holdings of timberlands, sufficient to take care of future requirements of its growing business. The capacity of the Hollingsworth & Whitney Company mills is 300 tons of paper and 300 tons of pulp a day.

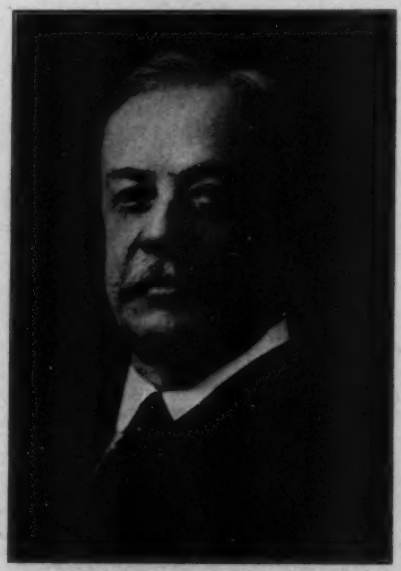
In the development of the business, there has been a steady improvement in the quality of the paper produced and at the present time Hollingsworth & Whitney Company produces paper of the highest grade in their lines. Their product is well known for its quality and uniformity.

The officers of the company are Waldo E. Pratt, president; M. L. Madden, vice president and general manager and Herbert E. Fales, treasurer.

Hollingsworth & Vose Company

THE Hollingsworth & Vose Company, Boston, Mass., with mills at East Walpole and West Groton, Mass., had its beginnings in the purchase and development of a paper mill by Lyman Hollingsworth, a son of Mark Hollingsworth, at West Groton, early in the nineteenth century. Two Hollingsworth brothers, John Mark and Lyman, had obtained a patent on the use of manila fiber in papermaking as early as 1843.

Zachary T. Hollingsworth, a nephew of the West Groton mill operator and a son of Amor Hollingsworth, of Tileston & Hollingsworth, in whose mill he learned papermaking, bought in 1871 the mill at Walpole operated under the firm name of Bird & Presby. A year or two later the mill was



Zachary T. Hollingsworth

burned and Mr. Hollingsworth at once rebuilt it and replaced an old 48-inch machine with a 62-inch cylinder machine made by Rice, Barton & Fales.

Charles Vose became connected with the firm in 1875 and was admitted a partner in 1881 when the firm name was changed to Hollingsworth & Vose. The business of the company increased rapidly and new structures were added, the mill being gradually enlarged in this way and by the addition of new machinery; a fourdrinier machine replaced the 62-inch cylinder machine.

In 1892, the firm name was changed to Hollingsworth & Vose Company which name is now retained. At that time, Z. T. Hollingsworth was president, Charles Vose, vice president and E. Frank Baker, treasurer. The business continued

Charles Vose

to expand, and in 1906, the 84-inch four-cylinder machine at East Walpole was replaced with a combination cylinder and fourdrinier of 110-inch face width; subsequently the 84-inch machine was installed at West Groton, making this also a three-machine mill.

In 1921, Z. T. Hollingsworth and Charles Vose retired, their places as president and vice-president respectively, being taken by their sons, Valentine Hollingsworth and Louis E. Vose.

The Hollingsworth & Vose Company are original manufacturers of rope papers and probably the largest producers in the world. In addition to the officers named Robert W. Lennox is treasurer and purchasing agent, and Thomas Compton Walsh is sales manager.

Charles F. Hubbs & Co.

CHARLES F. HUBBS & CO., importers of kraft pulp and paper, New York, began business under the name of Hubbs & Yates in 1865, being successors of an earlier firm. The business was incorporated as Charles F. Hubbs & Co. in 1908. The officers of the firm are Charles F. Hubbs, president and treasurer; Charles P. White, vice president; H. W. Doremus, secretary. The firm maintains branches in several large cities, the more important being Hubbs & Howe Co., of Buffalo and Cleveland; Hubbs & Hastings Paper Co., Rochester, N. Y.; Hubbs & Corning Co., of Baltimore, Md., and Interstate Cordage & Paper Co., of Pittsburgh, Pa.

The Jessup & Moore Paper Company

THE Jessup & Moore Paper Company, Philadelphia, Pa., with mills at Wilmington, Del., and at Providence, Md., is one of the oldest papermaking concerns in the United States. The Augustine mill of the company on the Brandywine river near Wilmington is not far from the site of a mill built by John and Thomas Gilpin in 1787, and it was here in 1816 that Thomas Gilpin invented and operated the first cylinder machine.

In 1793, a mill was operated farther up the stream at a place called Rockland. In 1843, Bloomfield H. Moore, of Philadelphia, became a partner of Augustine E. Jessup, of Westland, Mass., in a paper manufacturing firm which began operation at the Augustine mill, Wilmington, Del., in 1845. Later, the mill at Rockland was purchased and the manufacture of

50 YEARS OF 1878-1927 PROGRESS

Kimberly-Clark Company

ESTABLISHED 1872

Neenah, Wis.

Manufacturers of

ROTOPLATE

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paper continued at both plants for many years. The original mills were destroyed by fire but on their historic sites were erected the enlarged and modernized mills of The Jessup & Moore Paper Company.

The first product of these mills was book, lithograph and map papers. Today the line is more diversified, consisting principally of machine-finish, eggshell, size and supercalendar and school book for general jobbing and publication purposes. During the past year the Augustine mills have been improved and enlarged with new machinery and complete electrification of the plant. New buildings were erected to house the 168-inch machine just installed, which is declared by the makers to be the last word in papermaking machinery.

No history of The Jessup & Moore Paper Company would be complete without some reference to the part it has taken in the development of soda pulp manufacture. Hugh Burgess patented the soda process in England in 1852 and brought it to America two years later. It took much experimentation to make a commercial success of the process and in this work The Jessup & Moore Paper Company had a large share. In connection with Martin Nixon, the plant of the American Wood Paper Company was built at Royer's Ford on the Schuylkill, where soda pulp from poplar wood was made successfully for a period of forty years. In 1879, The Jessup & Moore Paper Company built the Delaware Mills in Wilmington, which have now a daily output of 200,000 lb. The Radnor soda mill at Elkton, Md., was built in 1883. Originally, poplar wood only was used here as at all other soda mills, but in 1899, experiments with the use of gum wood in the production of soda fiber was successful, and in 1905 the process was adapted to the cooking of pine wood as well. The Radnor mill now has a daily production of 100,000 lb. of pine pulp and 130,000 lb. of poplar and gum pulp.

Kimberly-Clark Company

THE KIMBERLY-CLARK COMPANY, Neenah, Wis., began producing paper in 1872, the output consisting of two tons daily of newsprint made from rag stock and selling at 14c per lb. At the time of the outbreak of the World War in 1914, the company had manufactured practically every grade of standard papers from straw and manila wrapping and newsprint to high-grade bond and ledger papers. Late in that year, the company undertook the production of a book paper especially suited to rotogravure printing and the result was a combination of chemical pulp and bleached groundwood which the firm began to manufacture on a commercial scale in 1915. The demand for this paper became so great that until 1919, the entire output was of this one product, except a line of specialties made on several of its small machines, such as cellucotton, fancy wall papers, colored box covers, etc.

In 1922, the growth and development of the firm was the subject of an article by J. A. Kimberly, then as now, president of the company. Mention was made of the foundation of the Neenah Paper Mill in 1865, which having proved successful, attracted the attention of parties who formed the firm of Kimberly, Clark & Co. and erected their Globe mill for the manufacture of print and book papers entirely from rags. The Neenah mill which had been started by Colonel Haynes was purchased in 1874 and operated with the Globe mill till 1885 when it was torn down and a two-machine book mill erected on its site. From this pioneer beginning, the firm reached out to Appleton and built in 1879 the large three-machine mill of the Atlas Paper Company, combining with it a groundwood mill. Here the first paper made largely from ground or mechanical pulp in the State of Wisconsin was made. Following this, the Vulcan mill was built and a few years later the Badger and Tellulah mills were built. The growth of the company from the Globe mill with its two-ton daily product to its present capacity of 500 tons is an object lesson in the development of a great company.

The Kimberly mill was destroyed by fire in 1901 and two years elapsed before it was rebuilt and enlarged with a bleaching department added to the sulphite mill. The company operates mills at Neenah, Appleton, Kimberly and Niagara, Wis. The latest of the chain of mills is that at Kapuskasing in which the New York Times is interested. The Niagara Falls mills has been operating for several years in the manufacture of book paper and groundwood pulp. In planning the mill at Niagara Falls, the company provided for what was then the widest book paper machine ever used, the face width being 196 inches. Coincident with the building of this mill, the company arranged for an assured supply of pulp and pulpwood and secured a controlling interest in the Spruce Falls Company, of Kapuskasing, Ont., carrying with it a concession of spruce timber on a tract of nearly 2,000 square miles.

The company was reorganized in 1907 owing to the death of three of the four original partners. C. B. Clark, Sr., died in 1891; F. C. Shattuck, treasurer, died in 1901, and H. Babcock passed on in 1905. J. A. Kimberly, Sr., the only remaining member of the "Big Four" as they were called, with F. J. Sensenbrenner and the second generation of the Kimberly, Clark and Shattuck interests, took over the business and they together with the younger men associated with them have carried it on. J. A. Kimberly, Sr., retired from active business several years ago but has remained president of the company since its reorganization and this year marks the fifty-seventh year of his connection with the firm. The present officers are J. A. Kimberly, president; F. J. Sensenbrenner, 1st vice president; J. C. Kimberly, 2nd vice president; C. B. Clark, 3d vice president; Ernest Mahler, 4th vice president; S. F. Shattuck, treasurer, and Harry Price, secretary.

Keith Paper Company

KEITH PAPER COMPANY, Turners Falls, Mass., dates its foundation from 1871 and is this year entering the fifty-seventh year of its business existence. The organization of the company was effected at a meeting attended by such representative men in the industry as Alvah Crocker, Albrecht Pagenstecher, Edwin Bulkley, John Keith, Wendell T. Davis, B. N. Farren and William C. Dunton. After a board of directors had been chosen, John Keith was named president and he selected a site at Turners Falls for the construction of a two-machine paper mill. Upon the death of Mr. Keith in 1886, Alexander H. Rice, ex-governor of Massachusetts, succeeded him. Mr. Rice had been identified with the paper industry from early manhood.

Albrecht Pagenstecher was the third president of the company, having succeeded Ex-Governor Rice when he died in 1895. Mr. Pagenstecher passed away last August and has been succeeded by Jonathan Bulkley. Associated with Mr. Pagenstecher as treasurer and general manager of the company until 1908 when he retired, was Charles N. Burnett, who was succeeded by James F. Bush. Mr. Bush served until January 1, 1912, when his place was taken by Albert R. Smith, the present treasurer and general manager.

The mill of the Keith Paper Company is well equipped for the manufacture of fine writing, bond, and ledger papers. There are five rotary boilers for the cooking of rag stock and twenty-one washing and beating engines in one line, with jordan engine equipment for each paper machine. The mill has been recently enlarged to a four-machine mill, two 80-inch and two 86-inch fourdriniers being operated. An account of the improvements which have been recently effected will be found in the January issue of THE PAPER INDUSTRY on page 1723.

The present officers of the Keith Paper Company are: Jonathan Bulkley, president; Rudolf Pagenstecher, vice president; Albert R. Smith, treasurer and general manager, and Wallace B. Marston, assistant treasurer. The directors are Jonathan Bulkley, J. Ogden Bulkley, Alvah Crocker, Douglas Crocker, Edward A. Jones, Rudolf Pagenstecher, William D. Russell, and Albert R. Smith.

Knowlton Bros., Inc.

KNOWLTON, BROS., Inc., Watertown, N. Y., is a firm that celebrated its fiftieth birthday in 1912, but George W. Knowlton the father of the present president of Knowlton Bros., Inc., started a little paper mill at Watertown, N. Y. under the firm name of Knowlton & Rice a little more than a hundred years ago, and continued in business for thirty years. In 1854, having practised economy and saved some money, the elder Knowlton retired from business, and the mill property was turned over to two young men from Dalton, Mass., named Charles O. Brown and Edward Chamberlin. Brown sold his

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Kraft Pulps:

K. H. B.
DYNAS
OBBOLA

interest within a year to a Mr. Farwell and the firm name was changed to Chamberlin & Farwell. It was with this firm that George W. Knowlton, Jr., first went to work in the finishing room at a weekly wage of $3. He left in 1858 and took a position as backtender in a paper mill in Herkimer, N. Y., operated by May & Rogers. Some time afterwards he went back to Watertown and took a position with his former employers, Chamberlin & Farwell. The property was not paying and young Knowlton and a brother took it over and established the firm of Knowlton Brothers. After operating the mill for the first half of 1862, it was found that a profit was being made. The Civil War was then on and there was a good demand for paper. Then came the after-war days and the brothers became convinced that the mill could not succeed as a fine paper plant. In 1872, serious losses resulted as an aftermath of the Chicago Fire and the firm was on the verge of bankruptcy. Fifty years have elapsed and Mr. Knowlton is still in the paper business at the Kamargo mill. He was active in the construction of the Ontario mill, a two-machine mill, sold to the International Paper Company in 1898, and the St. Regis Paper Company's four-machine mill now operated by the Northern New York Utilities Company and the Carlyle interests of Watertown and New York.

Knowlton Brothers manufacture cover papers, box covers, laid writing, mimeograph and high-grade colored specialties, with a daily capacity of twenty tons. The officers are G. W. Knowlton, president; G. S. Knowlton, treasurer; W. H. Howes and R. L. Pease, vice presidents; H. E. Harmon, secretary, and J. C. McCormick, assistant treasurer.

McDowell Paper Mills

McDOWELL PAPER MILLS, at Manayunk near Philadelphia, manufacturers of glassine, greaseproof, imitation parchment, plain, supercalendered and embossed, have a history extending back more than a hundred years. During this time the property has remained in continuous control of the family. The present mill was operated first in 1825, and Joseph McDowell, grandfather of the present owner, Charles McDowell, made paper there from 1858 until his death in 1870. The business was continued by his son Francis W. McDowell who had learned the art of papermaking from his father and had also a connection with the Megargees as well as Jessup & Moore, having charge of their mill in connection with his own mill at Manayunk. Upon his death in 1907, the business was taken over by his son Charles who had gotten his technical training at the Rensselaer Polytechnic Institute and some business experience with The Jessup & Moore Paper Company in Wilmington, Del.

In the early days of the firm, book and print papers were made, as well as manila and rope papers for clasped envelopes and strong heavy wrappers. These high-class papers were driven out by the advent of sulphites and foreign krafts. Charles McDowell imported the pulp and machinery to make kraft paper, but it was impossible in those days to compete with foreign manufacturers, there being no tariff protection and the firm was obliged to give up this branch of manufacture. Kraft and sulphite specialties in different designs and finishes as well as colored textile papers were then made for a time until the pressure from imported papers became too great and the mill was put on greaseproof.

In 1900 and 1912, new machinery was added and a considerable tonnage of glassine and greaseproof papers was produced. In 1924 the mill was electrified, which provided ample power to run through high and low water and to operate continuously twenty-four hours daily. With two machines, one 72 to 76-inch trim and one of 96 to 102-inch trim, together with supercalenders, it can be operated to a capacity of fifty tons on specialties of all kinds, plain and colored, as well as the main products glassine, greaseproof and imitation parchment.

The Mead Pulp and Paper Company

THE Mead Pulp and Paper Company, Chillicothe, Ohio, may be traced back to the mill at Chillicothe established in 1846 by Ells-Claflin & Co., of Dayton, Ohio, with which was associated Col. Daniel E. Mead, grandfather of George H. Mead, who now heads the Mead Pulp and Paper Company. Colonel D. E. Mead and W. A. Weston purchased the interest of the others and formed the Mead & Weston firm which afterwards became The Mead Paper Company, following an interval when it was known as The Mead & Nixon Paper Company. George H. Mead organized The Mead Pulp and Paper Company in 1905 and operated a soda pulp mill and a two-machine paper mill in Chillicothe, where he afterwards took up his residence. In 1924, The Mead Pulp and Paper Company took over The Peerless Paper Company, a two-machine mill located in Dayton and having a productive capacity of forty-five tons. The Mead Fibre Company, of Kingsport, Tenn., manufacturing soda pulp and book paper, to the extent of ninety tons of the former and thirty-five tons of the latter, is another division of The Mead Pulp and Paper Company, the officers of which are George H. Mead, president; R. T. Houk, H. E. Talbott, Jr., and N. S. Talbott, vice presidents; Speed Warren, treasurer; Robert E. Cowden, secretary.

Newton Paper Company

THE Newton Paper Company, Holyoke, Mass., manufacturers of sheathing, wrapping and felt papers, dates from 1874 when it was founded by Moses Newton who incorporated the firm in 1876. The present officers are Henry L. Russell, president; James M. Ramage, vice president, and Herbert B. Newton, treasurer.

Robertson Paper Company

THE Robertson Paper Company, manufacturers of folding boxes and box boards, Montville, Conn., originated with the Rockland Paper Mill, a wooden structure built in 1850 and the Montville Paper Company founded in 1859. Carmichael Robertson bought the Montville Paper Company in 1863 and the Rockland Paper Mill, in 1872. He also built the Bank Mill in 1886 and operated these mills under his own name.

Carmichael Robertson died in 1888 and the business was carried on by his three sons, Alexander, Tryon, and William, under the name of The C. M. Robertson Estate. It manufactured manila paper made from rope, also writing, anti-rust, and wall papers. The company's connection with the folding box industry began in 1895 when The C. M. Robertson Estate took over the Rex Box Company's plant. The company was incorporated as The C. M. Robertson Company in 1908, a name which was changed to Robertson Paper Company in 1916. The paper mill now makes paper board in all grades from white patent coated to chip, but specializing in colors and approximately 80 per cent of the stock is converted into folding boxes in its own box factory.

The Smith Paper Company

THE Smith Paper Company, makers of fine tissue papers, Lee, Mass., dates properly from 1826, with the erection of a paper mill in Lee by Messrs. Winthrop, Walter and Cutler Laflin, which later passed into the hands of The Smith Paper Company and was known as the Housatonic Mill. It supplied the paper for the first edition of the New York *Herald* and continued to do so for many years. The mill was enlarged from time to time as business increased. Woodpulp was unheard of at the time, rags and white waste paper being the principal raw materials. In order to satisfy the demand for a larger sheet of paper, a 100-inch fourdrinier machine was added to the equipment, the first machine of this width in use at that time.

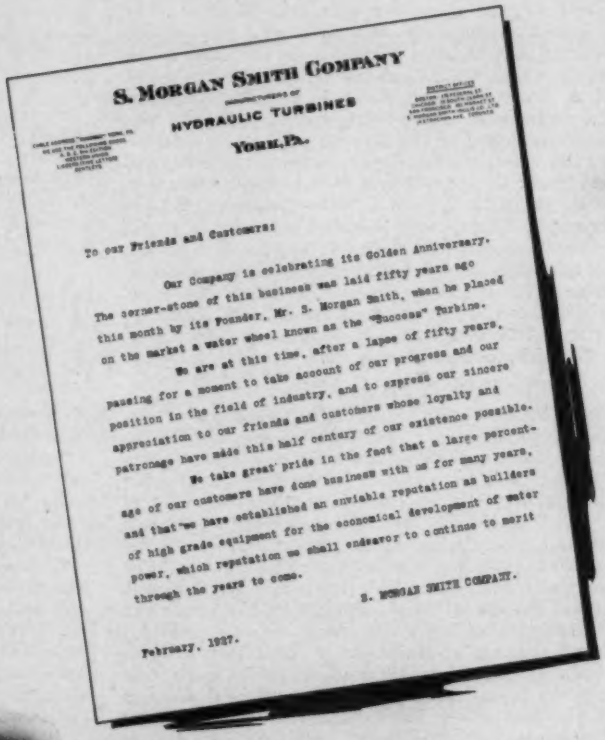
The Laflins built another mill higher up the stream at Crow Hollow which is still operated as the Columbia Mill of The Smith Paper Company. The New York *Tribune* dated its start from this time. Horace Greely and Winthrop Laflin were friends. Greely expressed the desire to issue a daily newspaper if he could get the paper on three months' credit. Mr. Laflin agreed to furnish it, and thus began The New York *Tribune*. This mill was later operated by Phelps & Field, Field being a brother of Cyrus W., David W., Henry M. and Stephen D. Field. Cyrus W., of Atlantic Cable fame, worked in New York handling papers from Berkshire County exclusively.

The Columbia Mill was bought by Elizur Smith in 1863. Two years later it was burned, but immediately rebuilt.

The Valley Mill of The Smith Paper Company dates from 1835 when print paper was made in it. The mill was operated by different parties until 1857 when it was bought by the

1877 50th Year 1927

Above illustration shows an S. Morgan Smith Turbine of many years ago.



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MANUFACTURERS OF
HYDRAULIC TURBINES
YORK, PA.

To our Friends and Customers:

Our Company is celebrating its Golden Anniversary. The corner-stone of this business was laid fifty years ago this month by its Founder, Mr. S. Morgan Smith, when he placed on the market a water wheel known as the "Success" Turbine.

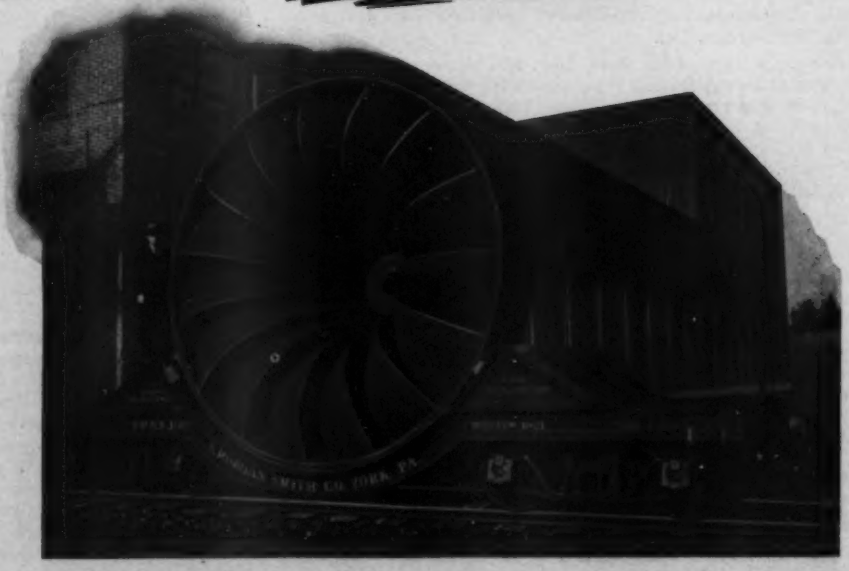
We are at this time, after a lapse of fifty years, pausing for a moment to take account of our progress and our position in the field of industry, and to express our sincere appreciation to our friends and customers whose loyalty and patronage have made this half century of our existence possible.

We take great pride in the fact that a large percentage of our customers have done business with us for many years, and that we have established an enviable reputation as builders of high grade equipment for the economical development of water power, which reputation we shall endeavor to continue to merit through the years to come.

S. MORGAN SMITH COMPANY.

February, 1927.

Today, our factory is the largest in the world devoted exclusively to the manufacture of hydraulic turbines and accessory equipment.



Accompanying view is one of the Smith Hydraulic Turbine runners for the Bellows Falls plant of the New England Power Co.

A single casting made in cores, which weighs approximately 60 tons and will develop 20,000 horsepower under 57 ft. head.

S. MORGAN SMITH CO.—YORK, PA.

50 YEARS OF PROGRESS 1878-1927

Smiths who began the manufacture of book and newsprint. The plant was changed over for the making of tissue in 1896 and it is now running at full capacity on high-grade cigarette and Bible papers.

In 1834, Elizur Smith had bought a half interest in the Turkey Paper Mill in Tyringham owned by Ingersoll and Platner. Mr. Smith took active charge of this mill and the other two partners carried on the manufacture of paper at the Aetna Mill, located west of the river where the Eagle Mill now stands.

By the purchase of Mr. Ingersoll's interest in the mill, Mr. Smith formed a partnership with the remaining partner, Mr. Platner, who died in 1855. Mr. Smith continued the business under the old firm name and with the outbreak of the Civil War there came an increased demand for paper and the company expanded, Elizur Smith taking his two nephews, Wellington Smith, Sr. (father of Wellington Smith who is secretary of the present company) and DeWitt S. Smith (father of Willard F. Smith who retired recently as president and active manager of the company) as partners. Thus the business continued under the name Smith Paper Company.

Ground woodpulp was first made in America at Curtisville in the township of Stockbridge in a little mill owned and operated by Albrecht Pagenstecher. The pulp was made in Voelter grinders which had been imported by Mr. Pagenstecher. The wood used was native Berkshire poplar and the daily capacity of the mill was 2,000 lb. The first practical demonstration of the new process of making paper from wood took place in the Columbia Mill of Smith Paper Company, March 8, 1867, under the supervision of Frank Hollister who was at that time superintendent.

News, book and manila wrapping papers were made down to as late a period as 1890 when the Smiths were induced to undertake the manufacture of copying tissues at the Eagle Mill. The mill and equipment were overhauled and by 1903, the company had six machines on fine papers. The company was reorganized in 1917 under the name The Smith Paper Company and the plant and equipment remodeled with the installation of up-to-date machinery and methods. At present, in the different mills of the company, seven machines are running on high-grade tissues such as carbons, condensor and cigarette, as well as Bible, silver, nitrating and stereotype papers. The officers of the company are Norval H. Busey, Jr., president; Gilbert L. Clark, vice president; Wellington Smith, secretary, and Charles J. Donahue, treasurer.

The Paul A. Sorg Paper Company

THE Paul A. Sorg Paper Company, Middletown, Ohio, comes down to the present time from a manila paper mill, the first of its kind west of the Allegheny mountains, built in Middletown in 1866. An advertisement of the mill, or rather an editorial notice, appears in the Middletown *Journal*, of August 5, 1866, wherein it is stated that the manila paper manufactured by Messrs. Hill and Peck "is much lighter and equally as strong as that of greater weight."

Hill and Peck made jute and rope papers, the initial output of which on a 36 inch machine was 800 lb. a day. A jobber in Cincinnati was consulted about acting as distributor for the output. Mr. Hill was informed that half of the output could be handled but not the entire 800 lb., Mr. Hill being cautioned about flooding the market with that grade of paper.

In the early '80's production jumped to ten tons in twenty-four hours and a few years later it went to fifteen tons. Burlap wrapping and manila rope were the two cheap raw materials; jute butts were introduced later and used extensively in combination with rope. Rope and jute were eventually displaced by sulphite, sulphate and groundwood pulps.

The old plant of Hill & Peck was taken over by The Paul A. Sorg Paper Company in 1900 with the intention of continuing the manufacture of rope and jute papers, but business in that line did not start off well. By good fortune a contract was secured for the making of "Inner-Seal" for the National Biscuit Company, which was continued for fourteen years. Having been so successful in producing an acceptable sheet for the waxing trade, the company continued with this line, and a large part of the mill's production is used as the basis of wax paper.

Paper of various kinds is made at the Sorg plant to the extent of forty-five tons a day, the weights ranging from 24 x 36-15 lb. per ream to 24 x 36-350 lb. per ream. The plant is equipped with one 124 inch fourdrinier; one 92 inch four-cylinder; one 114 inch two-cylinder; sixteen beating engines, and three refining engines.

With the acquisition by purchase in 1917 of the W. B. Oglesby Paper Company, producers of high-grade rag and rag-content papers, The Paul A. Sorg Paper Company began an era of expansion, which was further accentuated in the building of the Frank Smith Paper Company mill in 1923, with a production of 90,000 lb. a day. This, added to the production of the original mill and the Oglesby mill, gives a total production of 130 tons. The three divisions produce jute and rope specialties, bonds, writings, ledgers, high-grade offsets, playing cards and index bristols; covers, duplex sealing wrappers, bleached white for waxing and specialty papers, which surely represents a great expansion from the small beginning in 1866 with an output of less than one-third of a ton.

Southworth Company

THE Southworth Company, of Mittineague, Mass., has an honorable record of eighty-eight years in the manufacture of rag paper, for it was incorporated as the Southworth Manufacturing Company in 1839. Organization was effected at a meeting in Metoneag Falls, as Mittineague was then known before a post office had been established there, distinct from West Springfield.

The prime movers in this enterprise and holders of a majority of the stock were the brothers, Wells Southworth and Edward Southworth who were closely connected in its fortunes until their respective deaths in 1882 and 1869. Reorganized in 1873 after the death of Edward Southworth as the Southworth Company, its presidents have invariably borne that name: Wells Southworth, John H. Southworth, George C. S. Southworth, H. Woodburn Southworth, and Thomas S. Southworth.

In the earlier days of the Southworth mill, paper was made by the wire-cloth cylinder process, now remembered only in the older mills and replaced by the more efficient fourdrinier machines. As late as 1849 the paper was dried over a "fire dryer" or sheet iron drum in which was maintained a wood fire, coal at that time being scarcely known even on railways. This enormous chamber about 15 feet in height occasionally became overheated and burned the woolen blanket which controlled the paper passing over. The old wooden mill was destroyed by a fire in 1883 and rebuilt the following year.

More recently the mill has been electrified throughout and new machinery installed for making fine quality papers by modern processes. It is believed to have been the first mill to engage in the manufacture of typewriter papers, and within its walls was developed the "DeLuxe" process of visible watermarking which is protected by patents.

Thomas S. Southworth, president of the company, is probably the only survivor of those who attended the first meeting of the Writing Paper Manufacturers' Association held in Pittsfield, February 13, 1861. The active management of the Southworth Company is now in the hands of Melvin D. Southworth and his brother Edward Southworth, grandsons of one of the founders.

Stevens & Thompson Paper Company

THE Stevens & Thompson Paper Company, North Hoosick, N. Y., goes back eighty-one years when the mill was owned and operated by Garrett and Milton who made about one ton of straw wrapping daily in it, until 1858 when the mill was sold to A. & W. Orr, of Troy, N. Y. Samuel S. Stevens, who at that time was superintendent of Orr's mill at Troy, came in as a partner of the Orrs and purchased a one-third interest. The mill was partially rebuilt, the cylinder vat removed, and a fourdrinier wet part installed. During the Civil War the particular output of the mill was newsprint for the New York *Herald*. This was made of 50 per cent rag and 50 per cent bleached rye straw pulp, and the production was increased to about two tons a day.

Alexander Orr, senior member of the firm, died in 1868, and in settlement of his estate Samuel S. Stevens bought one-half interest, and George S. Thompson, of Troy, N. Y., bought

Pioneers of Business

THE true pioneer has the far-sightedness to see possibilities in an enterprise where seemingly none exist. And it necessarily follows that courage and persistence to realize these dreams are required.

Whether in opening up new ways and new lands, or in developing a business, this holds true; for the entrepreneurs of an industry require vision, courage and persistence, and are as truly pioneers as were our Puritan forefathers.

John L. Riegel, the founder of the Warren Manufacturing Co., was one of the pioneers of the paper industry. With true pioneer spirit, he was one of the first to experiment with straw, wood and jute—particularly jute—for paper making purposes. That he was successful is evident. Within a few years, "Riegel's Manila" was known everywhere for its high quality—a quality that the Warren Manufacturing Co. has improved upon and maintained ever since. Today, the firm is generally acknowledged to lead all others in the manufacture of jute papers.

When some few years later the firm of John L. Riegel & Son became the Warren Manufacturing Co. this adventuring spirit was not lost. It was never lost in the years that followed. New processes, new materials, new methods for producing better paper at lower cost were continually being sought. Through all the stages of the firm's growth, this pioneering was going on.

And today it is the same. Today, the Warren Manufacturing Co., is, figuratively, gazing into the future—still finding new possibilities where seemingly none exist—still possessing the courage and persistence to develop these possibilities into better paper—still pioneers of the paper industry.

Rope and Jute Specialties
Detail Drawing Paper
20th Century Bristol
Service Manifold

THE WARREN MANUFACTURING COMPANY · PAPER MAKERS · ESTABLISHED 1873 ·

Jute Envelope
Pattern Paper
Jute Tag
Glassine

The Warren Manufacturing Company

General Offices—342 Madison Ave., New York City

Western Office—1912 Conway Bldg., Chicago

MILLS IN NEW JERSEY AT RIEGELSVILLE & MILFORD

50 YEARS OF PROGRESS 1878-1927

the other half, forming the co-partnership of Stevens & Thompson. The production was increased to five tons a day by the installation of a new 52 inch fourdrinier machine built by the Smith & Winchester Company in 1870. This co-partnership was dissolved in 1904 and the business incorporated with Samuel S. Stevens, president, and George S. Thompson, vice-president and treasurer.

In 1874 the corporation leased a paper mill at Walloomsac. The history of this property begins in the eighteenth century with the development of a waterpower and the building of a grist mill.

In 1900 the interest of Samuel S. Stevens was purchased by his two sons Frank L. and Fred N., who had been associated with him in the business since 1884, and in 1908 the business was incorporated as the Walloomsac Paper Company, with Robert H. Thompson, president and treasurer, and George S. Thompson, vice-president.

In 1885 the Stevens & Thompson interests purchased a small groundwood mill at Middle Falls, N. Y., for furnishing woodpulp to their North Hoosick and Walloomsac mills, and incorporated the business in 1903.

In 1905 Samuel S. Stevens died, and his sons Frank L. and Fred N. took over his interest. George S. Thompson died in 1913, his interest being taken over by his son Howard B.

In 1922 the three companies were incorporated into one company as Stevens & Thompson Paper Company with Frank L. Stevens, president; Fred N. Stevens, vice-president; Frank L. Scott, vice-president and manager of sales; Howard B. Thompson, treasurer, and Banjamin W. Sudgen, secretary.

Storrs & Bement Company

THE Storrs & Bement Company, Boston, is the development of a business founded in 1847 by Amariah Storrs, who marketed cardboards and glazed papers in the district known as old Cornhill. After various removals in keeping with the growth and development of the business, the building was finally located on the present site at 140-150 Federal Street, Boston. The firm of A. Storrs & Bement Company was incorporated in 1884, and in 1887 W. F. McQuillen, R. C. McQuillen, and C. M. Bryant purchased the business when the field of operations was enlarged and additional room was needed.

R. C. McQuillen died in 1912 and in 1916 Charles M. Bryant passed away, leaving to W. F. McQuillen the entire direction of the corporation. Mr. McQuillen had spent about forty-six years of his life in the paper business, most of the time with the Storrs & Bement Company. He was one of the best known men in the paper trade of the United States during his connection with the company. His activities in association work made him a prominent figure in merchandizing circles, and he was twice president of the National Paper Trade Association. After his death on February 4, 1926, the firm was re-organized, William B. Stevenson being chosen president; William N. Stetson, Jr., vice-president, and Bryant McQuillen, treasurer.

Tileston & Hollingsworth Company

THE firm of Tileston & Hollingsworth Company, Boston, is of great age, if we date from the origin of the Mattapan mills which began operations at Mattapan on the Neponset river, now a suburb of Boston, in the year 1728, under the firm name of Boies & Clark. Ownership of the mills changed several times until 1801, when Mark Hollingsworth and Edmund Tileston formed a co-partnership, and leased from Jeremiah Smith Boies the mill in which Mr. Hollingsworth had been working since 1793. The company flourished and absorbed a number of the neighboring mills. In 1828 they were operating the Fuller mill, which was for many years a familiar landmark near the Mattapan Bridge. In 1826 they purchased the Sumner Mill, which was on the present site of the Mattapan mills. The ownership of these mills descended from father to son down to the present generation. In 1889 Amor L. Hollingsworth became the controlling factor in the management and president of the company when it was incorporated.

With the passage of time, many changes were made in the mill. In 1897, a 120 inch fourdrinier was installed, to be replaced twenty-six years later by a new machine of greater capacity. In 1906 Mr. Hollingsworth induced his nephew, Amor Hollingsworth, to join him in the business, and shortly thereafter he assumed the entire management, effecting a complete reorganization, with George E. Montague in charge of sales and Arthur V. Howland as office boy and assistant bookkeeper. Following this, alterations and additions in the way of improvements were made continuously.

Several years ago a building contractor erected an office building for his own use in the front yard of the mill property and has occupied it in the spring and summer seasons ever since.

In 1911, Edward J. McDonnell, who had been assistant superintendent, became superintendent, and the new 104 inch machine was added, which has since been replaced by a new machine. Mr. McDonnell was succeeded in 1922 by his brother, Mr. Frank S. McDonnell.

The Tileston & Hollingsworth Company makes a wide variety of fine papers, their principal lines being Milton Cover Wove, Milton Text Wove and Laid, Milton Direct Mail Pieces, Athena Plate, Silk Surface, Flemish Book, Tiho Bond, Mattapan Index Bristol, as well as the regular machine finish and super papers.

The mill occupies a distinctive position among paper manufacturing plants, being situated in a large city instead of in the woods. This, however, has its advantages as it allows for very prompt shipment all over New England and to ports reached by steamers sailing from Boston. The business of the company has shown an increase each year, and an aggressive sales policy is in force.

S. D. Warren Company

THE S. D. Warren Company, Boston, with mills at Cumberland, Me., began business in 1854 when Samuel Dennis Warren, founder of the company, bought a paper mill in the town of Westbrook, Me., which consisted of a few wooden buildings and three small machines. The daily output of the mill consisted of about 3,000 lb. of news, manila and brown wrapping paper. From 1855 to 1867 the business was conducted under the firm name of Grant, Warren & Co. In 1871 Charles Fairchild was taken into partnership and the firm name changed to S. D. Warren & Co. The elder Warren died in 1888 and the business was continued under the same name with his son, S. D. Warren, Mortimer B. Mason and Fiske Warren as partners. In 1925 the company was reorganized, and the officers then chosen have continued as follows: Roger D. Smith, president; Joseph A. Warren, vice-president; George Olmstead, vice-president; P. E. Hinkley, secretary, and Clyde B. Morgan, treasurer.

The S. D. Warren Company has specialized in the production of coated paper for printing purposes and in the manufacture of India paper. A research laboratory is maintained, as well as a mill control laboratory, and much original work is done in the examination and analysis of raw materials and finished products.

The Warren Manufacturing Company

THE Warren Manufacturing Company owns and operates four paper mills, located at Warren Glen, Hughesville, Riegelsville and Milford, all in New Jersey, close to the Delaware river and forty miles north of Trenton. The establishment of the company in 1873 was mainly the result of John L. Riegel's success with a paper mill of his own in 1862, this mill being absorbed later by the Warren Manufacturing Company. Much of the subsequent prosperity and growth of the company should be credited to Benjamin Riegel and John S. Riegel, into whose capable hands the control of the company came upon the death of their father. The original paper mill at Finesville, N. J., where John L. Riegel first made paper in 1862 still stands, a picturesque landmark of the early days of papermaking.

The idea of engaging in the manufacture of paper was probably suggested to John L. Riegel by Amos Davis, a manufacturer of Easton, Pa. The firm of Amos Davis & Company bought an old gristmill in Finesville in 1861, and by August, 1862, at an expenditure of $27,000, had built a paper mill that was turning out daily one ton of newspaper. Mr. Riegel had

ATHENA PLATE

THE ENGLISH FINISH

"Paper of Old Fashioned Quality"

that is frequently mistaken for

COATED PAPER

SOLD BY A SELECTED LIST OF
DISCRIMINATING MERCHANTS

MADE BY

TILESTON & HOLLINGSWORTH CO.

"Papermakers for More Than One Hundred and Twenty-five Years"

213 CONGRESS STREET, BOSTON, MASS.

LIQUID CHLORINE

Single Unit Tank Cars Multi-Unit Tank Cars 150-lb. Cylinders
(1- Ton Containers)

Bleaching Powder

Natrona Porous Alum Commercial Sulphate of Alumina

Manufactured by

PENNSYLVANIA SALT MANUFACTURING COMPANY

Incorporated 1850

Executive Offices:
Widener Building, Philadelphia, Pa.

Representatives:
New York Chicago
Pittsburgh St. Louis

Works: **Philadelphia and Natrona, Pa. - Wyandotte and Menominee, Michigan**

Chlorine Distributing Station: **Babbitt, N. J.**

50 YEARS OF PROGRESS 1878-1927

invested $10,000 in the enterprise. His partners, in addition to Amos Davis, were Cyrus Lawall, William H. Lawall, Tobias Worman and Cyrus S. Stover. The paper was made from all kinds of waste material, including rags, rope, hemp tow, Agram rags, English blues, London prints and sackings. The paper was of standard news weight, the same then as now, 480 sheets 24 inches by 36 inches weighing from 31 to 32 lbs. The widest sheet was probably 56 inches. The manufacture of rag news was discontinued in 1864 when processes had become available for the utilization of straw, wood and jute, and the mill was given over to the production of strawboard.

In 1865, Mr. Riegel became sole owner of the mill, and attracted by the high prices obtained for rag news he resumed the manufacture of this paper. Rag newsprint paper was then selling for 22½ cents a pound. At the same time Mr. Riegel began the manufacture of jute manila wrapping from old bagging and gunny.

In 1867 the firm of John L. Riegel & Son was formed by the admission to partnership of Benjamin, the oldest son of John L. Riegel. The new firm continued the search for a better fiber and experimented with jute butts, the earliest work on record in this country. After that, the mill made nothing but jute wrapping, and "Riegel's Manila" became widely known. At present the Warren Manufacturing Company is the largest consumer in the world of jute butts for papermaking.

The subsequent history of the company is one of continuous development and expansion. In 1873, John L. Riegel, Benjamin Riegel, John Brown, Samuel Boileau, and James W. Long incorporated The Warren Manufacturing Company and built an additional mill at "The Forge," four miles above Riegelsville, in which two fourdrinier machines built by Pusey & Jones were operated.

The second expansion—the building of a new mill to take advantage of a 25-foot fall in the stream just below Warren—was undertaken by the company as the result of recommendations made by John L. Riegel in 1889, and the first shipment of paper from this mill at Hughesville was made in February, 1891.

John L. Riegel died December 27, 1893, and his loss was felt severely. The entire responsibility of managing The Warren Manufacturing Company devolved on his son Benjamin who, however, brought to his task the wide experience he had gained as general manager under the direction of his father. Benjamin Riegel resigned from the company in 1897 on account of failing health, and he died in 1918. He was succeeded by his younger brother, John S. Riegel, who had been with the company since his graduation from Lehigh University in 1890. Jute paper and rope specialties were made for a short time at the Brooklyn mill formerly owned by the William Marshall Paper Company which had been acquired by The Warren Manufacturing Company by purchase. The location of the mill was an impracticable one for a paper mill, and the machinery was moved to a new mill erected at Milford, N. J., in 1907, production being started the following year on the same papers which had been made at Brooklyn.

After operating about two years on these papers it was decided to undertake the manufacture of glassine, and in 1910 the first glassine was made at the Milford mill. The first year the company succeeded in marketing 100.000 tons of glassine, a big achievement. In recent years the annual output has increased sevenfold, and today The Warren Manufacturing Company is the largest manufacturer of glassine in the world.

John S. Riegel died in 1916 and was succeeded by Robert T. Spencer, whose connection with the paper industry dates from 1884.

The company's mills were electrified in 1917, and everything is now motor driven except two paper machines which are operated by steam. George L. Bidwell, general superintendent and director of mills, introduced a new process for the manufacture of jute and rope papers, which involved nearly as large an expenditure and almost as heavy a loss in equipment as did the introduction of electricity. The newest mill, Milford, has four machines making glassine paper. Machine No. 4 is practically a duplicate of the No. 3 machine, which was said to be the largest glassine mill operated anywhere.

The officers of the company consist of Benjamin D. Riegel, chairman of the board of directors; Robert T. Spencer, president and treasurer; Joseph L. Seiler, vice-president; John L. Riegel, secretary and general manager; Louis O. Angevine, assistant treasurer; George L. Bidwell, general superintendent and director, and Paul R. Bachman, sales manager.

West Virginia Pulp and Paper Company

THE West Virginia Pulp and Paper Company, New York, with mills at Tyrone, Pa., Piedmont, W. Va., Luke, Md., Covington, Va., Mechanicville, N. Y., Williamsburg, Pa., Cass, W. Va., and Spruce, W. Va., has acquired several old mills since it was incorporated.

The immediate predecessor of the West Virginia Pulp and Paper Company was the Piedmont Pulp and Paper Company. It is through the acquisition of the Tyrone mill of the Morrison & Cass Paper Company that the West Virginia Pulp and Paper Company belong to the fifty-year class of paper manufacturing firms.

In the early '70's J. S. Morrison and D. M. Bare began operating a wrapping paper mill at Roaring Springs, Pa. This mill had one 66-inch cylinder machine. It was burned down and rebuilt about 1874. The firm was known as Morrison Bare & Company, and was one of the original twelve licensees of the American Wood Paper Company.

In 1876 Joseph K. Cass bought an interest, and the name of the firm was changed to Morrison, Bare & Cass, with an office in Vesey Street, New York. A second machine was put in at Roaring Springs, and in 1880 an old mill at Hulton, Pa. was purchased and the machinery removed to Tyrone, Pa. After this mill was started John G. Luke was superintendent until the mill burned down in 1881.

The mill was immediately rebuilt and a second machine put in. D. M. Bare withdrew and took over the Roaring Springs mill as his interest, and Messrs. Morrison and Cass took over the Tyrone mill, and operated it as a partnership under the name of Morrison & Cass, with offices in Pittsburgh. This partnership continued until 1890, when the business was incorporated as Morrison & Cass Paper Company, just prior to the death of Mr. Morrison. Soon after his death the offices of the company were moved to Tyrone, and a store and warehouse maintained in Pittsburgh. The mill was later further enlarged and two more machines added.

In 1899 the Morrison & Cass Paper Company was taken over by the West Virginia Pulp & Paper Company of Delaware, but the corporate name was retained until 1910 when it was dropped and completely merged with the West Virginia Company.

The Whiting Paper Company

THE Whiting Paper Company, of Holyoke, Mass., operated a fine paper mill on the upper level canal in Holyoke in 1862, the daily output of the mill being five tons. A few years later it was found necessary to build another mill of six tons' capacity to meet the growing demand for the class of papers then made by the company. The mill had ten 800-pound beating engines and two fourdriniers, 66 and 78 inches respectively. The pay roll of the mill, representing 500 hands, amounted to $19,000 a month, which was considered remarkable in those days.

In 1865, The Whiting Paper Company was incorporated by William Whiting. The company now operates two large, modernly equipped mills in Holyoke manufacturing the best grades of pole dried papers, and employment is given by the company in a separate plant to 400 hands making papeteries or fine stationery. Offices are maintained by the company in New York, Philadelphia, Chicago and Boston. The present officers are William F. Whiting, president; William Whiting, treasurer, and Edward C. Whiting, secretary.

An opening into a factory building large enough to permit the entrance of a freight car sometimes presents quite a door problem. In such instances, steel doors that roll usually more than justify their cost. Large wooden doors, or any door that swings from hinges, not only take up considerable space, and require, in winter, their pathway area to be shoveled, but frequently blind neighboring windows, and are subject to the strain of high winds and the abuse of careless workmen. Steel rolling doors guard such track entrances with increased efficiency, a minimum of space and a maximum of service.

The Taylor Stoker

A Complete Combustion System

Don't think of the TAYLOR STOKER as just a stoker. It's a complete system of combustion that burns coal just as it comes from the mine in the simplest, most efficient, most economic way.

At the mill of the St. Croix Paper Company, Woodland, Me., Taylor Stokers cut the fuel bill 30% and reduced the boiler room watch from eight to three men.

Taylor Stokers are saving money in scores of big paper mills in this country and Canada.

Normal operation at 175% to 300% of boiler rating is common practice in Taylor Stoker plants.

Taylor Stokers burn all sorts of coal.

When the simplest system produces the best results, it is the logical one to install, for in the last analysis, what should govern is the cost of 1000 pounds of steam with all charges, including fixed charges, taken into consideration.

Taylor Stoker
Literature will gladly be sent to anyone interested in power plant design or operation.

American Engineering Company

2419 Aramingo Avenue, Philadelphia, Pa.

Canadian Sales and Service by **Affiliated Engineering Companies, Ltd.**

Head Office: Southam Bldg., Montreal, Que.

"Builders of Fine Machinery Since 1857"

50 YEARS OF PROGRESS 1878-1927

Firms in Allied Industries

Abendroth & Root Manufacturing Co.

THE production on a commercial scale of Root spiral riveted pipe, the invention of J. B. Root in 1866, was begun early in 1867 by Abendroth & Root Manufacturing Company, of Newburgh, N. Y., so that the firm is now in its sixty-first year. The Abendroth & Root Manufacturing Company have extensive offices at 233 Broadway, New York, and maintain branches in Chicago, Pittsburgh and Mexico. To all of the larger manufacturers of pulp and paper, Root pipe is a familiar product, as it is particularly adapted to many of the pipe needs of pulp and paper mills. Inside the mill it is employed to convey water to grinders, and stuff to beaters, jordans and paper machines, besides being used to carry pure water, waste water, compressed air, hot liquids, exhaust steam, or pulverized coal.

Outside of the mill, Root spiral riveted pipe has a wide field of usefulness, being employed not only to supply fresh water above or below ground, often over considerable distances, but for conveying water through smaller pipe lines to filter plants, condensers and fire pumps; for use in and about by-product plants, and for moving waste water, controlling exhaust steam, and similar work.

The principal advantages of Root spiral riveted are referred to as great strength coupled with light weight and since these features have a particular appeal to operators of pulp and paper mills, the firm has specialized in paper mill pipes for more than half a century.

The works of Abendroth & Root Manufacturing Company are situated at Newburgh on the Hudson river close to the river's edge and transportation facilities are unsurpassed.

The American Engineering Company

THE American Engineering Company, of Philadelphia, manufacturers of Taylor stokers, Lo-Hed electric hoists, Juruick electric refrigeration machinery and ship's auxiliary machinery, will celebrate this year the seventieth anniversary of the founding in 1857 at Providence, R. I., of the American Ship Windlass Company, which in 1906 was acquired by Williamson Brothers, of Philadelphia, who reorganized the combined business in 1912 under the present name.

The company has two large and completely equipped factories in Philadelphia, one of which is devoted entirely to the manufacture of Taylor stokers, while the other plant is used for the company's other products.

Taylor stokers burn coal just as it comes from the mine without any special preparation plant being needed. They are installed in the new central station of the Boston Edison Company; the Hell Gate station of the United Electric Light and Power Company, New York; the big new station of the Public Service Production Company, at Kearny, N. J., a suburb of Newark; in the new station of the Philadelphia Electric Company; in several plants of the Detroit Edison Company and many other central electric stations and industrial power plants throughout the country. In the paper industry, Taylor stokers are used in scores of large mills, including such companies as Abitibi Power and Paper Company, Bathurst Company, Ltd., Port Alfred Pulp & Paper Company, St. Maurice Paper Company, Ltd., E. B. Eddy Company, Ltd., St. Croix Paper Company, Champion Coated Paper Company, Backus Brooks Company, and many others equally large and progressive.

American Steam Pump Company

THE American Steam Pump Company, manufacturers of American Marsh pumps, Battle Creek, Mich., was organized in 1873 and started the manufacture of Marsh pumps in 1888. Being located in the heart of the Kalamazoo paper mill district, the firm makes a specialty of paper mill pumps and builds practically every type of pump used in the modern paper mill, including centrifugal stock pumps, vacuum, centrifugal pumps for all types of service, as well as a most complete line of direct acting simplex and duplex boiler feed pumps and air compressors.

The American Steam Pump Company started the manufacture of pumps in a small way at first, building only half a dozen of the smaller sizes of Marsh boiler feed pumps and have gradually increased the line until at the present time over 3000 different sizes and types are made for practically every kind of service. About fifteen years ago the name of the pump was changed from Marsh to American-Marsh. The officers of the company are R. R. Hicks, president; John W. Bailey, vice-president, and W. R. Munn, secretary. Their New York office is located at 17 Battery Place and their Chicago office at 926 Monadnock Block.

E. C. Atkins & Company

ELIAS C. ATKINS, SR., founder of E. C. Atkins & Company, came to Indianapolis in 1856, to work for his uncle at a salary of $30 per year. In 1857, with $500 borrowed capital, and a keen desire for a business of his own, he set up an anvil and a few other implements in a small shed near a planing mill in South East Street, Indianapolis, Ind. He called his shop the Sheffield Saw Works, and he smithed and tempered all his saws by hand. For two years he struggled along, but suddenly a large order came in which necessitated a new furnace. Having no money, he borrowed the brick from a brickmaker nearby, and laid the furnace himself. This same furnace later gave him the first set-back, for a fire occurred shortly after this, and completely demolished the little shop.

As soon as things were shaping again, Mr. Atkins sent to Connecticut for Louis Suher, a German sawwright, who walked all the way to Indianapolis to become the first regular employee in the Atkins plant where he worked the rest of his life. Suher's grandson and great-grandson are employed in the Atkins organization today.

As pressure of production necessitated the introduction of machinery for one process after another, Mr. Atkins invented and produced a device for every make of saw, and during his lifetime obtained more than 100 patents. The house of Atkins has manufactured its own machinery from the start.

A triumph in the founder's career came with the application of his metallurgical ore in the development of a fine saw steel. He sailed to England in 1873 with a tentative new formula to submit to the Jessops, famous manufacturers of crucible steel, who deprecated the idea of putting sword steel into mere saw blades, but Mr. Atkins directed the work himself in a shop later, and tested by hand the successive batches of plates as they were made into saws. When the formula was perfect, he placed an order for 5000 plates, a large quantity in that day. Today, about 10,000 tons of crucible steel are converted annually into Atkins saws.

The present corporation of E. C. Atkins & Company was formed in 1885, and from then until today, under the direction of the immediate family, this company has become a great institution with 2,200 employees, and factories in Indianapolis, and Hamilton, Ontario, and sales offices in Paris, France, and Sydney, Australia, as well as branch houses all over the United States.

Every variety of saw is produced by the Atkins factory from jewelers' saws, 4 inches long by ⅛-inch wide, to long-hand saws 75 feet long by 20 inches wide.

The present officers are Henry C. Atkins, president, son of the founder, who entered the business in 1889 and assumed presidency in 1901; N. A. Gladding, first vicepresident who entered the company in 1886 and advanced to his present position in 1898; F. C. Gardner, secretary and treasurer who came into the business in 1881; W. A. Atkins, vice president, and a nephew of the founder, who entered the factory in 1889; E. C. Atkins, vice president, son of the present president, who came with the company since the World War, and the most recent addition to the official family, K. W. Atkins.

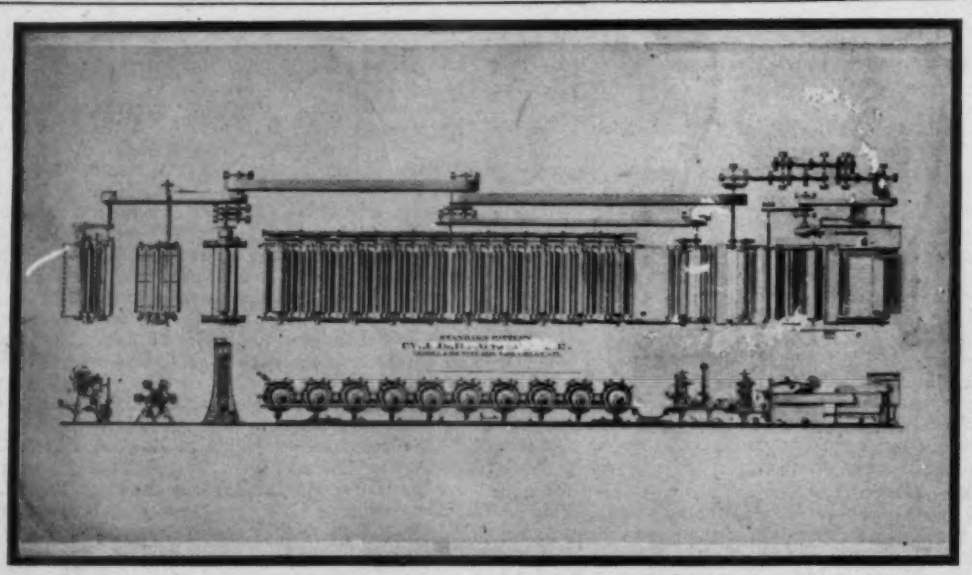
E. B. Badger & Sons Company

A REVIEW of the history of E. B. Badger & Sons Company, Boston, Mass., shows that it was established in 1841 under the original name of Rice & Jenkins. E. B. Badger was associated in this company. In 1850, Mr. Jenkins retired and the name was then changed to Rice, Hicks & Badger. A few years later the name was again changed to Hicks & Badger, and in 1877, Mr. Hicks retired from this company and E. B. Badger, with his oldest son, D. B. Badger, carried on the business from then on under the name E. B. Badger & Son. In 1892, another one of Mr. Badger's sons, Arthur Badger, joined the company and the name was again changed to E. B. Badger & Sons Company, which it is today.

Since that time E. B. Badger, 2nd, has become associated

50 YEARS OF PROGRESS 1878-1927

1858



The Best in 1858

MACHINE.....“Beloit” Cylinder Machine
WIDTH.....42 inches
SPEED .....75 feet per minute
To make shipment of machine, *two* cars required

Send for Bulletins Nos.

Beloit Iron Works **Beloit, Wis., U. S. A.**

Since 1858 Builders of Paper, Board **Mill and Container Plant Machinery**

80 YEARS OF PROGRESS 1878-1927

1927

The Best in 1927

MACHINE—

"Beloit" Removable, Adjustable and Shakeable High Speed Fourdrinier

WIDTH ..... 234 inches
SPEED ..... 1200 feet per minute
WIRE CHANGES ..... In an hour or less

To make shipment of machine, *seventy-five* cars required

9 and 10 for new 1927 facts

Beloit Iron Works **Beloit, Wis., U. S. A.**

Since 1858 Builders of Paper, Board Mill and Container Plant Machinery

50 YEARS OF PROGRESS 1878-1927

The Bagley and Sewall Company

Watertown, New York

OUR FACILITIES FOR MANUFACTURING COVER A RANGE FROM THE SMALLEST TO THE LARGEST MACHINES REQUIRED FOR ALL GRADES OF PAPER

Our 1926 Production

1-234" News Machine
1-234" News Machine
1-156" Book Machine
1-234" News Machine
1-234" News Machine
1-136" Glassine Machine
1-94" Tissue Machine

FOUR OF THE ABOVE HIGH-SPEED MACHINES ARE EQUIPPED WITH OUR NEW TYPE POSITIVE

Sectional Mechanical Drive

HAVING

Totally Enclosed Spiral Bevel Gears
Magnetic Clutches
Electric Controls for Starting

BUILT IN FOUR SIZES FOR ANY WIDTH OF MACHINE

Some 1927 Features

ADJUSTABLE LIP SLICE HIGH SPEED WINDERS
ANTI-FRICTION STEAM JOINTS
ENCLOSED TYPE HIGH SPEED DRYER DRIVE

50 YEARS OF 1878-1927 PROGRESS

with the company and at present is vice president and general manager. His father, D. B. Badger, is still active in the business and is president. His grandfather, E. B. Badger, the founder of this company, died in 1918.

The E. B. Badger & Sons Company for the last ten years has been particularly interested in the manufacture of various articles for the pulp and paper industry. They have specialized particularly in copper expansion joints for steam lines, spray nozzles and spray ponds, copper piping, copper covered paper mill rolls and evaporators. Their black liquor evaporators are especially designed for the handling of the various kinds of pulp mill liquors such as soda, sulphate and sulphite.

An interesting thing about this company is its trade mark. To one who knows Boston, it is perhaps more interesting than to one who does not. The grasshopper on Faneuil Hall Market has been the trade mark of this company since about 1890.

The Bagley & Sewall Company

THE Bagley & Sewall Company, of Watertown, N. Y., had its origin in a machine shop which was started by George Goulding in 1823, so that the history of the firm extends back more than a century of time. In 1827, the Black River Cotton & Woolen Company deeded real estate and water-rights to George Goulding in the same locality. He continued his business here until April 10, 1840, when he bought real estate and water rights and built a new shop on the west side of the highway across Sewall's Island, on the north branch of Black River. He was soon called upon to build and install all kinds of machinery for various purposes. The sawmills, gristmills, tanneries, blast furnaces, paper mills, woolen and cotton mills and other industries were equipped with machinery designed and built by him.

At the beginning of the year 1853, his business had increased to the point where more capital and more executive ability were needed, so that Mr. Goulding could devote more time to the mechanical details. On September 12, 1853, the copartnership of Goulding, Bagley & Sewall was formed, the value of the business and plant being $19,000.

George A. Bagley was born in Watertown, July 22, 1826. He was admitted to the bar in May, 1847, and was an attorney-at-law for a few years, but as the practice of law was distasteful to him, he gave it up to engage in business. He was elected to the United States Congress in 1874, as a representative of the 22nd District of the State of New York, and sat in the 44th, and 45th sessions of Congress.

Edmund Q. Sewall was born in New York City, July 1, 1826, and was brought to Watertown by his parents when three years old. He graduated from Harvard College at the age of 18, and then spent two years at Heidelberg University, Germany. He also was a member of the legal profession.

Mr. Bagley at once became the aggressive leader of the newly formed copartnership and rapidly increased its lines of activity. Mr. Sewall had charge of the accounting and the correspondence, while Mr. Goulding was in direct charge of the shop.

In 1853, the entire working force in the shops of Goulding, Bagley & Sewall consisted of twelve men. In the late '50's, a large business of building steam boilers and engines had been developed in sizes from 4 to 100 horse power.

The copartnership of Goulding, Bagley & Sewall was dissolved August 27, 1860. The same day the partnership of Bagley & Sewall was formed. George Goulding continued as superintendent for Bagley & Sewall until 1865. He died June 24, 1878.

In 1870, Warner Miller and a Mr. Churchill, of Herkimer, N. Y., purchased in Germany the patents for the process of making groundwood pulp, and brought the first Voelter grinder to the United States. Bagley & Sewall began to build these grinders for Miller and Churchill in 1871. These were later superseded by the hydraulic pulp grinder in 1880.

When groundwood pulp was first used, the methods for the handling of pulp from the grinders were unsatisfactory and this led to the design of the spring wet machine by Bagley & Sewall, on which they were granted the first United States patent on such a machine.

The first fourdrinier part for a papermaking machine was built by Bagley & Sewall in 1875, for the Watertown Paper Company. It was for a wire 46 inches wide, and is still in operation, though removed from the original installation.

In 1870, Bagley & Sewall began to build the Prentiss patent vise, and at the present time about 100 men are engaged in the manufacture of these vises.

As Watertown is located in the heart of the papermaking district of Northern New York, it was concluded that this was the logical location for a plant to build papermaking machinery, so in 1889, new buildings were erected and new machinery installed, and the building of high class fourdrinier and cylinder papermaking machines was begun.

Since that time until the present, these machines have been the principal product of the plant. These machines have not only been supplied to the leading mills of the United States, but also to Ontario, Quebec, British Columbia, Newfoundland, Mexico, England, France, Norway, Sweden, China and Japan. The first machines were sent to Japan in 1896, and since that time 22 machines have been supplied that country for making all kinds of paper, from strawboard to fine writing and cigarette papers.

The Bagley & Sewall Company was the first to produce a machine to make paper continuously at 1,000 feet a minute. The firm has built machines 245 inches wide, the widest ever built in the United States. When the new shops were built in 1912, machinery was installed capable of building machines 300 inches in width. From 1889 to date, the company has built 197 complete papermaking machines, beside rebuilding many others.

The Bagley & Sewall Company was incorporated July 7, 1882. The first board of directors was George A. Bagley, Edmund Q. Sewall, Alfred D. Remington, Walter Sewall and Levi Johnson. George A. Bagley was elected president, and Edmund Q. Sewall, secretary and treasurer.

The present officers are Stuart D. Lansing, president; Charles W. Valentine, vice president; Charles D. Bingham, treasurer; Clarence E. Kinne, secretary.

Stuart D. Lansing was born at Watertown, N. Y., November 21, 1866, and was graduated from the University of Pennsylvania in 1888. He began with the Bagley & Sewall Company as an accountant immediately after he took his degree. He was elected secretary of the company, September 30, 1897; director and vice president, February 10, 1913, and became president on May 25, 1915.

Edward S. Lansing is assistant to the president and has been connected with the company since leaving Yale College in 1916. During the World War he was a Captain in the American Expeditionary Forces and saw active service in France.

Harry C. Kinne who has been connected with the company since 1899, is purchasing agent and assistant sales manager.

Beloit Iron Works

SEVENTY years of continuous specializing and progress in the manufacture of paper mill machinery has given to the Beloit Iron Works, Beloit, Wisconsin, maturity and dependability which reflect the great esteem in which the company is held by the papermaking industry.

Founded in 1858, the Beloit Iron Works represents one of the oldest existing paper machinery manufacturers in the United States. Serving first the small but growing papermaking industry of the Middle West, and its own fertile home state of Wisconsin, this organization has grown year by year and extended its field of service and influence to the four corners of the earth. The rise of this pioneer firm from pre-Civil War days to the present, has more than kept pace with the advancement of the industry as a whole.

In making a recent shipment of a new fourdrinier where 75 box cars were required to complete the order, it was recalled by some of the old timers that a machine shipped in 1858 required only two box cars.

During the past decade, the progress of the Beloit Iron Works has been notable because of its progressive and modern manufacturing policies. Among the noteworthy innovations have been the removable fourdrinier, adjustable and shakeable fourdrinier features, and more recently, the oilless, frictionless, self-balancing steam dryer fitting. A highly

A. D. 1819 A. M. Perkins.....London, England
1851 A. M. Perkins & Son.....London, England
1870 Joseph Baker .....London, England
1873 Paul Pfleiderer.....London, England
1880 Werner & Pfleiderer.....Canstatt, Germany
1893 Werner & Pfleiderer & Perkins, Peterborough, England
1893 Werner & Pfleiderer.....Saginaw, Michigan
1919 Baker Perkins Co.....Saginaw, Michigan

The Werner & Pfleiderer

Pulping and Shredding Machines
for cellulose

Mixing Machines
for blanc fixe, colors, etc.

Rapid Dissolvers
for caustic solutions and coatings

Production Machines and Laboratory Units

BAKER PERKINS CO.

SAGINAW *Main Office and Works* **MICHIGAN**

NEW YORK
250 Park Ave.

BRANTFORD, CANADA
Dominion Bk. Bldg.

CHICAGO
2004 Conway Bldg.

SAN FRANCISCO
901 Pacific Bldg.

50 YEARS OF PROGRESS 1878-1927

skilled engineering department and research laboratory is maintained by the company.

In Wisconsin, the Beloit Iron Works is a dominant figure in the industrial life of the State. Ninety-five per cent of their employees own their own homes, a fact that makes for happy and contented workmen.

The officers of the Beloit Iron Works are A. Aldrich, president, a veteran and pioneer whose inventive genius has been the source of many of the company's noteworthy improvements; E. H. Neese, vice-president and treasurer, who is an experienced organizer and executive, and G. A. Macklem, manager of sales, whose knowledge of mill problems is invaluable.

H. Belfield Company

THE firm of H. Belfield Company, Philadelphia, was established by Henry Belfield in 1836 within a stone's throw of the present site at the southeast corner of Broad and Hamilton streets, Philadelphia. He was one of the pioneers in the manufacturing and inventing of valves for the control of steam, water, air, oil, gas and a full line of steam specialties. From the modest-size original plant, it has been enlarged several times to meet the growing demands of customers. On

the firm foundation of quality, growth was so rapid that an incorporation was effected April 21, 1907, and the present officers are: R. L. Murray, president; J. R. Goehring, vice president; W. Barnhurst, treasurer, and H. L. Murray, secretary.

Having used for expansion all of the available ground on the original site, it was necessary to construct in 1918 a large warehouse at 20th and Cambria streets, on the main line of the New York division of the P. R. R. The building is the latest word in construction and arrangement, running in length a city block and capable of holding 250 cars of pipe. The house of H. Belfield Co. has made a specialty of manufacturing a line of valves for use of the paper industry and after years of experience developed the transfer, butterfly, reducing and bibb valves, swing joints, expansion joints and numerous types of round way cocks used by many of the largest mills. They make the well known Just Right Guide Line and special valves of every description.

Baker Perkins Company

THE Baker Perkins Company, Inc. (Werner & Pfleiderer Company), New York, with factory at Saginaw, Mich., dates its origin from 1819, when A. M. Perkins established his engineering works in London. In 1851, A. M. Perkins & Son built the first steam pipe oven and heating devices, and thirteen years later built the first closed pipe oven and heating system. Another outstanding event in the history of the firm was when Joseph Baker started on bakery and chocolate machinery in 1870, the plant being enlarged in 1876. In 1873, Paul Pfleiderer established works in England to make "Universal" kneading and mixing machines, for which he took out patents in 1875. In 1880, Werner & Pfleiderer started in Cannstatt, Germany, an American branch being started in 1893 at Saginaw, Mich., as an outcome of the large exhibit at the World's Fair in Chicago. In the same year, Werner, Pfleiderer & Perkins was formed in England.

In 1918, Joseph Baker & Sons and Perkins, Ltd., became associated in building the U. S. A. bakery in France and merged the two firms into Baker-Perkins, Ltd.

In 1919, the American Baker Perkins was formed to purchase the Werner & Pfleiderer plant at Saginaw.

The first use of "Universal" pulper was in 1889 at the plant of John Dickinson & Co., Ltd., in Watford, England; and at Kunstdruck Papierfabrik, Carl Scheufelen, at Oberleunigen, Germany.

The "Universal" mixing and kneading machines have been modified to the requirements of over 150 different industries and shown at all exhibitions, starting with highest awards at Falmouth, at Augusburg, and at Leipzig in 1879. They are used considerably in viscose manufacture and for the reduction of "broke" papers.

In 1920, the new south side plant at Saginaw was built, and in 1926 this plant was enlarged.

The Black-Clawson Company

THE Black-Clawson Company, of Hamilton, Ohio, is internationally recognized as a leader in the manufacture of paper and pulp mill machinery. It was originally started by F. X. Black in 1898, L. P. Hurm was elected president and shop. In 1878, L. P. Clawson was admitted as a partner when they began to specialize in the manufacture of paper machinery in a small shop at Market Street and Monument Avenue.

With the growth of the business, larger quarters and more capital was required; thus, The Black & Clawson Company was organized in 1883 and a new shop built at the present location, Second and Vine Streets.

F. C. Trowbridge joined the organization in 1887 as a draftsman and a traveling representative, meeting with much success. With the withdrawal of L. P. Clawson in 1896 and the selling of his interest to James E. Hancock, Mr. Trowbridge became an officer of the company. With the death of F. X. Black in 1898, L. B. Hurm was elected president and Mr. Trowbridge became secretary and treasurer.

In 1903, the company was reorganized with a capital stock of $1,000,000, Bradford Shinkle becoming president, with F. C. Trowbridge remaining secretary and treasurer. Upon Mr. Shinkle's death in 1909, Frank Witaker became president. At Mr. Whitaker's death in 1910, Mr. Trowbridge was placed in the chief executive position with H. L. Kutter as secretary, and H. R. Dilg, treasurer.

Under the careful direction and through carrying out of progressive methods, the plant has expanded considerably and the business enlarged to extensive proportions, the product of the concern meeting with splendid market in all parts of the world. The company's capital stock today is $1,398,500.

The Black-Clawson Company today manufactures in addition to a big line of paper and pulp mill machinery and all its branches—ink mills, lard coolers, roll evaporators, pumps and other special machines.

While depressions have come and gone, The Black-Clawson Company holds its well defined position of recognized leadership in its line.

The Bigelow Company

THE accompanying details of the initial organization and development of the Bigelow Company, of New Haven, Conn., in 1833 were obtained from G. W. Bigelow, brother of the late H. B. Bigelow. In that year, Cyprian Willcox, of Macon, Ga., established a foundry and machine shop on the west side of Whitney Avenue, near Grove Street, New Haven, Conn. The works were located on the banks of the Farmington canal and received water from the canal as motive power. The works were of modest proportions and the machinery somewhat primitive, though fairly well fitted for the requirements of that early day.

About 1836, the firm name was changed to Willcox & Pryor and the business extended so as to include the manufacture of malleable iron. As that art was in somewhat of an experimental stage, and for other reasons, the partnership was subsequently dissolved and the business divided, Mr. Pryor taking the malleable iron part, and Mr. Willcox the gray iron foundry and machine shop. After the Pryor dissolution, Mr. Willcox admitted his son, Henry, to a partnership in the business, the firm name being Cyprian Willcox & Son. In

50 YEARS OF 1878-1927 PROGRESS

Belfield Transfer Valve

has an important place in all paper mills, dye houses or any industry which has a heavy thick fluid to move from one container to another by means of piping.

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ANGLE BIBB VALVE

Belfield Angle Bibb Valve

Made iron body, Brass mounted, screwed or flanged.

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Belfield Butterfly Valves

are particularly adapted for use around dye houses, paper mills, paint manufacturers or any place where a sluggish liquid is to be controlled.

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Since 1836
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for Steam · Water · Air or Gas

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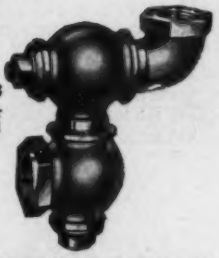

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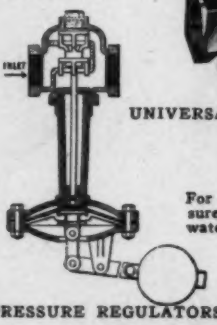
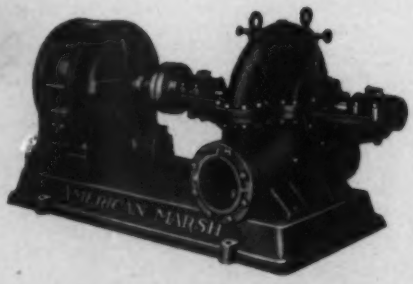
Your inquiries are invited on the above or any special articles you may design we are in a position to manufacture.



For Reducing the pressure of steam, air or water.

PRESSURE REGULATORS

American-Marsh Paper Mill Pumps



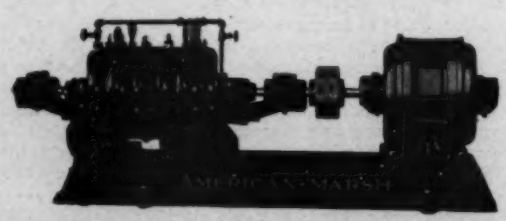
There is an American-Marsh Pump designed for practically every paper mill condition. The line includes:

Centrifugal Paper Stock Pumps
Boiler Feed Pumps — **Deep Well Engines**
Vacuum Pumps — **Ball Valve Pumps**
Air Compressors — **Centrifugal Pumps**
Suction Box Pumps

American-Marsh Pumps are a result of over forty years' experience in the manufacture of high grade pumping machinery. Located, as we are, in the heart of the largest paper manufacturing center in the country, we have always made a specialty of paper mill pumps and are in position to furnish the type of equipment especially adapted for your requirements.

There are over 200,000 American-Marsh Pumps in actual operation throughout the world.

Write us in regard to your requirements
Our Engineering Department is at your service



American Steam Pump Company
Battle Creek, Mich.

Chicago Office
926 Monadnock Block

New York Office
17 Battery Place

50 YEARS OF PROGRESS 1878-1927

1852, Henry Willcox went to Urbana, Ohio, and built and equipped a machine shop and foundry.

About 1853, Cyprian Willcox leased the machine department of his New Haven works to two skilled mechanics, John A. C. Williams and Stephen B. Whiting, under the firm name of Williams & Whiting. Finding their capital insufficient, they subsequently added another member to their firm, which then became Larned, Williams & Whiting. A year later, the entire plant of Mr. Willcox passed into the hands of Ives & Smith, and this firm at once began extensive improvements by the erection of new buildings and additional machinery. The business of this firm was eminently successful until the death of Mr. Ives. Addison Smith continued the business in his own name for a brief period.

In 1859, Mr. Willcox again resumed control of the business with an associate, C. O. Gay, under the firm name of Willcox & Gay, a connection that was terminated in a short time by the death of Mr. Gay.

In 1860, H. B. Bigelow, a former foreman for the Ives & Smith, and Willcox & Gay companies bought the machinery department, conducting the business under his own name.

Notwithstanding the general unrest that pervaded business circles in consequence of the Civil War, the business of the Bigelow works assumed proportions, in excess of expectations. Foreseeing the necessity of larger capital, he organized The Bigelow Manufacturing Company, under the joint stock laws of the State of Connecticut, with himself as president and general manager.

The war created an unprecedented demand for implements and machinery. Mr. Bigelow was early in the field as a bidder for such articles or machinery as his works were capable of producing. Portions of machinery of the famous Ericsson monitor were built at his works.

Up to this time, the building of boilers had been merely a side issue, but gradually the company found themselves drawn, or we might say almost forced, into a line of business never before contemplated. The demand for boilers of larger sizes and for stationary, as well as marine, purposes soon compelled the company to seek larger and more commodious quarters.

In 1869, the Bigelow Manufacturing Company, under the name of H. B. Bigelow & Company continued the business, moving the works to more extensive quarters on Grapevine Point, then a suburb of New Haven. In 1871, George S. Barnum went to work for H. B. Bigelow & Company. In their new quarters, and with improved facilities, the business advanced rapidly until in 1872, when a disastrous fire destroyed nearly the entire works. Immediate preparations were made for rebuilding on a greatly enlarged scale. Frank L. Bigelow, son of H. B. Bigelow, began a connection with H. B. Bigelow & Co. in 1881. Two years later, in 1883, the company was incorporated as The Bigelow Company. At this time, H. B. Bigelow was made president; Henry Elson, vice president; George S. Barnum, treasurer, and Frank L. Bigelow, secretary. Shortly afterwards, Walter P. Bigelow was made assistant treasurer and later, the New York office was opened, with Walter P. Bigelow in charge.

In 1889, fire again consumed a portion of the works, which were speedily rebuilt on approximately fireproof plans. In 1891, H. B. Bigelow died, and Frank L. Bigelow was made president, and George S. Barnum, secretary and treasurer, with Walter P. Bigelow assistant treasurer. At this time, Frank Elson and Henry Elson severed their connection with the company.

During all this time, the demand for boilers of larger capacity was steadily increasing and the company decided to abandon the general machinery business and devote the entire capacity of the plant to the construction of boilers, tanks and work of like character.

In 1905-06, it was realized that the water-tube type of boiler was becoming more and more popular, and it was thought for some time that it would be advisable to go into the manufacture of water tube boilers, provided a proper design could be developed. The Hornsby boiler, made by the Richard Hornsby Company, of Grantham, England, was brought to the attention of the company; and negotiations were made so that the American rights for the manufacture of the Hornsby boiler and superheater were obtained.

The company was reorganized, and F. L. Bigelow was made president; Walter P. Bigelow, vice president, and George S. Barnum, secretary and treasurer. At this time, the entire plant of the works was reorganized; new boilers, new engines, with direct connected generators, electric traveling cranes and electric hoists were installed, so it might be said that the works were well up to date as regards general equipment.

In 1908, Walter F. Bigelow, of the New York office, died suddenly, and Lucius Bradley was named to succeed him. In the same year, Starr H. Barnum started to work in the shop; in 1910, Pierrepont Bigelow was taken on. In 1912, Starr H. Barnum was made secretary of the company, Pierrepont Bigelow being made assistant treasurer a year later. F. L. Bigelow died on June 20, 1917, and G. S. Barnum was made president.

On January 25, 1920, P. Bigelow died, and George S. Barnum was made president and treasurer, with Starr H. Barnum vice president and secretary. In 1923, the company was reorganized and the Bigelow heirs relinquished practically their entire interests.

At the present time The Bigelow Company is the largest and the oldest manufacturers of steam boilers in the New England States and is equipped with the most up to date and efficient machinery for the manufacture of their products. A number of machines installed have been put in of capacity in excess of the present requirements, anticipating the development of the art to higher pressures, temperatures and efficiencies.

Buchanan & Bolt Wire Co.

THE Buchanan & Bolt Wire Co., of Holyoke, Mass., was organized in 1878 by Robert Buchanan, John Bolt and Andrew Buchanan. Robert Buchanan and his son, Andrew Buchanan, were with the DeWitt Wire Cloth Company, of Belleville, N. J., and about the year 1876 had gone with the Morse & Whyte Company, of Boston, Mass., in the manufacture of fourdrinier wires; when they started in business at Holyoke in 1878, they purchased much of the machinery of the Morse & Whyte Company and took into partnership John Bolt, who had also been with the DeWitt Wire Cloth Company.

Being located in a papermaking center and under the control of practical wire cloth makers, the business was a success from the start and was soon ranked among the leaders in production and quality of paper machine wires and dandy rolls, which reputation it has steadily maintained.

Robert Buchanan died in 1894, and Andrew Buchanan in 1896, at which time the business was incorporated with John Bolt, president and treasurer, and G. E. Buchanan, secretary. In 1900, Mr. Bolt retired and G. E. Buchanan was made president; Robert Buchanan, a grandson of the founder, was made treasurer and general manager, and George Craig, who had been with the firm since the year of organization, was made secretary and general superintendent, and these are the present officers of the company.

Boston Woven Hose & Rubber Company

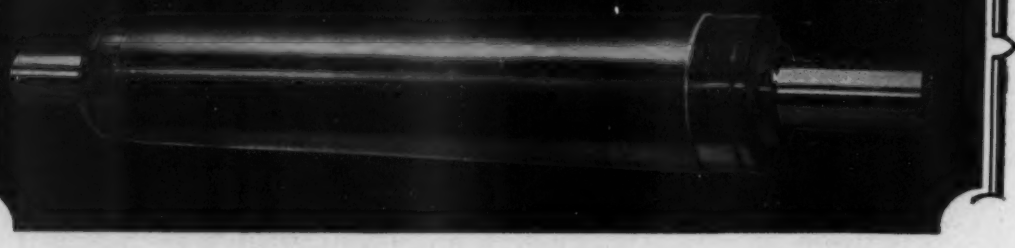
THE history of the Boston Woven Hose & Rubber Company, of Boston, Mass., forms a most interesting narrative of the industrial world. In 1870, Lyman R. Blake devised a machine for sewing up strips of rubber-coated canvas into hydraulic hose. He sold this machine to Col. Theodore A. Dodge, of Cambridge, who began with it the manufacture of "Blake Hose," a product of excellent properties. Its sales, however, scarcely advanced at all, for although the stitches were the one part of the hose that never gave out, the public looked askance at the seam, and the product was not a favorite.

In 1872, James E. Gillespie brought to Colonel Dodge the designs of a loom for weaving multiple tubular fabrics. Tubular goods had never been woven except on flat looms, which left a weak spot along the edge; goods woven in the round could not be made sufficiently solid, and only braided fabrics had ever been successfully marketed. Gillespie's loom was workable, but on account of its eighty thousand parts, was too "cranky" and too apt to break down; so Colonel Dodge hired an assistant for Gillespie named Robert Cowen, a young machinist of exceptional ability and persistence. Cowen at once set to work to improve the loom, and Dodge continued to finance the experiment until he had expended $150,000 on it.

Butterworth Calender Rolls

Are Now Available

For the Paper Industry



For more than forty years, Butterworth Calender Rolls have been known to the textile industry. During this time, the largest textile mills in the country have been using them.

The demands of the textile industry have for years taxed our capacity to produce Butterworth Calender Rolls.

Now, however, with greatly enlarged facilities for making these Long-Wear Rolls, we come to the paper industry, knowing that we can make promised deliveries—a feature of Butterworth Service.

Perhaps you would like to know more about Butterworth Long-Wear Calender Rolls. We shall be pleased to send you a booklet describing them.

Butterworth Calender Rolls, when you consider their quality, their ability to give those extra hundreds of hours of service, are certainly not high-priced.

For super, coated and glassine work.

H. W. BUTTERWORTH & SONS CO.

Established 1820

PHILADELPHIA, PA.

Plants at Philadelphia and Bethayres, Pa.

Canadian Representative:
W. J. Westaway, Hamilton, Ont., Canada

Providence Office
Turk's Head Building

Southern Office
1211 Johnston Bldg., Charlotte, N. C.

BUTTERWORTH *Calender* ROLLS

50 YEARS OF PROGRESS 1878-1927

By that time, the loom was radically altered; so with the help of one man and a boy they began business with it in part of an old soap factory.

Dodge had set a big financial sail and the wind of success caught it; but orders rained in too fast for him to handle on his limited capital, so in the spring of 1884 he took as an associate, J. Edwin Davis, the three principals of the company forming a corporation.

From then on, the growth of the business was phenomenal. By 1893, the capital had been increased to $600,000, a plant had been erected for the special requirements of the business, and again and again increased with land and buildings. From the manufacture of hose, the business increased in scope to rubber belting, jar rings, packing, gaskets, moulded goods, and indeed almost everything then possible in rubber manufacture, except clothing and shoes.

A new line was embarked on—bicycle tires—with a success so pronounced that the factory was snowed under with orders. The capital stock had to be increased to $900,000, and the machinery was run twenty-four hours a day to supply the demand. The staple lines of the business were crowded out or sidetracked by the tire trade, until finally, at the height of an unprecedented prosperity, the whole bottom fell out of the bicycle industry in the panic of 1897. Before the company could shorten sail and come about in safety, it had been driven on the rocks of reorganization.

The lesson was severe, but salutary. The company returned to manufacture along the lines that had given it its healthy growth, and speedily built up again. New processes and new machines, designed exclusively for its use, brought its former business back in rapid order.

The history of the Boston Woven Hose & Rubber Company has been one of sound, constructive growth, operatively and financially. It has never had a shutdown, a strike, or a lockout, and few concerns number among their employees more who have grown gray in their service. There are men in the Boston Woven Hose & Rubber Company today who worked at the bench with its founders, and to such workmen and to such methods must be ascribed their due share of its success.

H. W. Butterworth & Sons Co.

H. W. BUTTERWORTH & SONS CO., of Philadelphia, has been controlled by one family for 107 years. H. W. Butterworth, Sr., greatgrandson of the founder of the business in 1820, is now the president of the organization. The textile industry, during the last half-century, has taken the entire calender roll output of this concern. In addition, the H. W. Butterworth & Sons Co. make a complete line of textile finishing machinery. For years, according to A. W. Butterworth, vice president, the company has been endeavoring to announce to the paper industry that they were ready to accept orders for Butterworth Long-Wear calender rolls. Invariably, just when the time seemed ripe for making the announcement to the paper trade, the demands of the textile industry would, for some reason or other, again absorb their entire production. This has happened time and again. The opportunity finally came when the Butterworth organization was making some changes in the plant. Enough space was made available for a battery of giant presses on which their rolls were made. As quickly as possible, the presses were installed, and the announcement was made that Butterworth calender rolls were now available to the paper industry.

This was but a few months ago. Already Butterworth rolls are becoming known for their long rolls, especially on glassine where they are giving 1,500 hours and more. These rolls are made for super, coated and glassine work.

J. Ebert Butterworth, treasurer, is in charge of the Charlotte, N. C., office of the company. Other offices are in Providence, R. I., and Bethayres, Pa. There is also a Bethayres plant. The principal plant and offices of the company are in Philadelphia. In Canada, the company is represented by W. J. Westaway & Co., Hamilton, Ontario.

Bulkley, Dunton & Co.

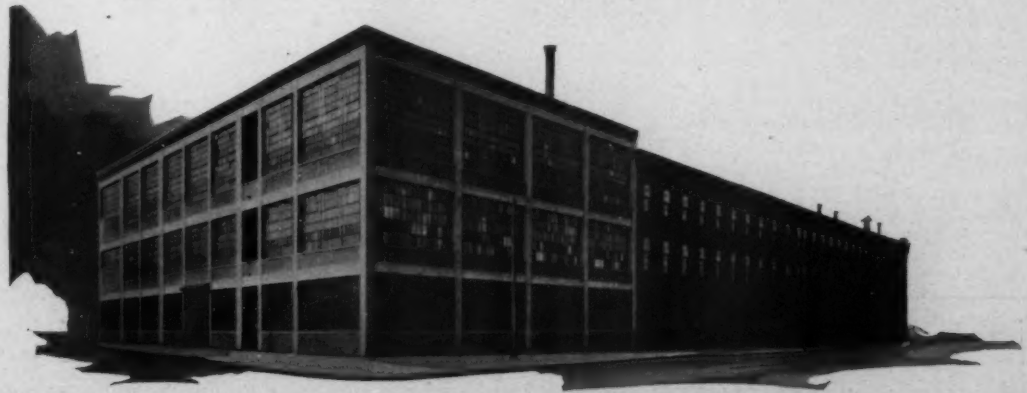
THE firm of Bulkley, Dunton & Co., New York, importers of foreign woodpulp and rags, and for upwards of fifty years selling agents for Knox Woolen Company, Camden, Me., had its origin 94 years ago when Jeremiah L. Cross established a commission paper warehouse at 111 Beekman street. For the past sixty-two years, this business has been conducted under the name Bulkley, Dunton & Co. at 75 and 77 Duane street.

In 1838, a partnership was formed by Jeremiah L. Cross, Edwin Bulkley and Hiram N. Gookin, under the style of Cross, Bulkley & Gookin, which continued the business begun by Mr. Cross. It was located at the corner of Pearl street and Burling Slip, afterward for many years the site of the Seventh Ward National Bank. The firm became successively Bulkley & Gookin, Bulkley & Brother, Bulkley Brothers & Company, and in 1865 Bulkley, Dunton & Company, this style remaining unchanged until the present. It will be observed the Bulkley name has appeared in all the firm styles since 1838. The complete list of partners since 1833 is as follows: Jeremiah L. Cross, Edwin Bulkley, H. N. Gookin, Lewis D. Bulkley, Wm. C. Dunton, Cornelius Perry, David G. Garabrant, Andrew Bulkley, Moses Bulkley, Jonathan Bulkley, James S. Packard, Wm. D. Russell, Franklin A. Stone and Joseph Godwin. The firm today consists of Jonathan Bulkley, Franklin A. Stone and Joseph Godwin.

The firm first became interested in manufacturing in 1864, but has owned and operated themselves only two small mills in western Massachusetts. One of these they still operate; the other, having been destroyed by fire, was not rebuilt. However, their interest as stockholders in mills independently managed, is very large. These mills are among the best in the country, such as Oxford Paper Company, Keith Paper Company, Ryegate Paper Company, St. Regis Paper Company and others.

For over fifty years Bulkley, Dunton & Company have been selling agents for Knox Woolen Company, Camden, Maine, manufacturers of "Excelsior" felts, for papermaking machines. These felts were the first successfully manufactured in this country and they bear a very high reputation.

In 1912, a pulp department was opened, especially for importing foreign woodpulp, and recently a rag department has been added. This part of the business is very successful and is increasing in magnitude under the management of Fred Enders.



Part of the H. W. Butterworth & Sons Co., plant at Philadelphia

50 YEARS OF 1878-1927 PROGRESS

Over three-quarters of a century—Superior

FIFTY years the American Paper and Pulp manufacturers have demonstrated their leadership in industry and their progressive spirit by their association to promote mutual interest and foster interchange of ideas.

FOR more than twenty-five years before the formation of the American Paper and Pulp Association papermakers showed their knowledge of their art by buying Superior wires made by The William Cabble Excelsior Wire Manufacturing Company.

FROM coast to coast, from Great Lakes to Gulf, papermakers acknowledge the superiority of Cabble wires in satisfying the requirements of the industry.

Wires for
Fourdriniers
Harpers
Yankees

Cylinder facings for
Cylinder machines
Thickeners Save-alls Decker
Wet machines

The Wm. Cabble Excelsior Wire Mfg. Co.

74-88 Ainslie Street
143-151-162 Union Avenue

Brooklyn, N. Y.

50 YEARS OF PROGRESS 1878-1927

E. Butterworth & Co., Inc.

The old house of E. Butterworth & Co., Inc., dealers in foreign and domestic papermakers' supplies and cotton waste, which maintains offices at New York and Boston was founded in Manchester, England, in 1839 by Edwin Butterworth. With the exception of William F. Dodge, who is the senior member of Edwin Butterworth & Co., Ltd., Manchester, England, all the original members of the firm have passed away. Edgar Smalley, who is now acting head of the firm and well known in the United States, is the grandson of the founder, Edwin Butterworth. Charles H. Wood, who is president, has been connected with E. Butterworth & Co., Inc. for fifty years. Horace B. Sargent, vice president, has been connected with them for over thirty years. Lewis Jennings, treasurer, has been connected with them for over thirty years. Bion D. Wheeler, assistant treasurer, has been connected with them for about ten years.

A. M. Byers Company

ESTABLISHED in 1864 as Graff, Byers & Co., incorporated in 1893 as A. M. Byers & Co., and in 1903 under its present name, the A. M. Byers Company, of Pittsburgh, Pa., make and sell approximately half the genuine wrought iron pipe today manufactured in the United States. In the early years bars, sheets, etc., as well as pipe, were made. Now the entire output of the company's puddle mills is required in the manufacture of Byers pipe, couplings and nipples. Surplus of pig iron, made primarily for supplying the company's puddle furnaces, is sold to the foundries within shipping distance of the blast furnace at Girard, Ohio.

It has been necessary for the Byers Company to devise distinguishing marks for their product, and for more than ten years the name Byers in raised letters, followed by two figures indicating year of manufacture, have been rolled into the metal and repeated each three or four feet on every length of Byers pipe. Since early in 1925, an additional marking has been provided in the form of a red or orange stripe which winds around each piece of pipe from end to end. It is painted on by machinery in the course of the several inspections to which the pipe is subjected prior to shipment. This stripe is visible from any angle, at distances of 50 feet or more, and makes Byers pipe, either black or galvanized, easily identified. Byers nipples are also marked with the Byers name and the thickness; that is, whether standard or extra heavy weight.

The Byers Company operates a blast furnace, puddle and rolling mills at Girard, Ohio, and puddle and pipe mills at Sixth and Bingham streets, South Side, Pittsburgh. These two plants employ from 2,500 to 3,000 men. A subsidiary company, The Orient Coal & Coke Company, operates in the bituminous fields of Southwest Pennsylvania, and employs 350 men.

The principal business office of the company is at 255 Water street, Pittsburgh, with the general sales office in the Union Bank Building, Pittsburgh. Branch sales offices are maintained in Boston, New York, Rochester, Philadelphia, Pittsburgh, Cleveland, Chicago, St. Louis, Jacksonville, Birmingham, Houston, Tulsa, and Los Angeles.

The Wm. Cabble Excelsior Wire Mfg. Co.

THE Wm. Cabble Excelsior Wire Mfg. Co., of Brooklyn, N. Y., is one of the oldest firms of fourdrinier wire manufacturers in the United States. The business was established by William Cabble at Roxbury, Conn., in 1848. He was a son of Edward Cabble, who was a wire manufacturer at Frome in Somersetshire, England, in 1800, being employed by one Joseph Whiting, whose daughter he married, and shortly afterward gained control of the business.

There being no opportunity for expansion and development at Frome, William Cabble and his brother David came to New York where they joined the organization of Robert Crocker, a manufacturer of wire. Two years later, William Cabble went into business for himself at Roxbury, Conn., a venture which terminated when the mill-stream upon which he depended for power ran dry. He then opened a mill at Belleville, N. J., and operated this plant for three years, after which he returned to New York and joined interests with the David Wood's plant, then the oldest wire weaving establishment in the United States. Mr. Cabble bought out his partner's interest, took his three brothers in with him as employees and moved the factory to the eastern district of Brooklyn where it was known as the Excelsior Wire Works. This was in 1857 and two years later, after a fire, the plant was rebuilt on its present site, Union Avenue and Ainslie Street, Brooklyn. The firm was first incorporated in 1870 and again in 1896.

The Wm. Cabble Excelsior Wire Mfg. Co., stands in the front rank of the wire weaving industry of the United States. At the death of William Cabble in 1870, he was succeeded as president by his younger brother Elijah, who in turn was succeeded by Joseph C. Cabble, and then came Frank W. Cabble whose untimely death was lamented only a few months ago. The direction of the business is now under Arthur E. Cabble, the new president.

Chadwick-Boston Lead Company

THE Boston Lead Company was organized in 1829 and in 1879 became the Chadwick Lead Works, with J. H. Chadwick as president. In 1901 another company, known as the Boston Lead Manufacturing Company, merged with the Chadwick Lead Works, forming a Massachusetts corporation known as the Chadwick-Boston Lead Company.

The old address of the Chadwick Lead Works was 176 High Street and of the Chadwick-Boston Lead Company, 162 Congress Street, Boston, Mass. There has been no further change in the name but on January 1 of this year, the company moved to 800 Albany Street, Boston, where the factory is located.

The Chadwick-Boston Lead Company is widely known in the pulp and paper industry as manufacturers of chemical lead pipe and hard lead flanged pipe and fittings for the piping of acid liquors.

Cheney Bigelow Wire Works

THE CHENEY BIGELOW WIRE WORKS, of Springfield, Mass., is a very old firm, having originated in 1842 when Cheney Bigelow began the manufacture in a small way of light-weight wire cloth of various kinds, some of this product being sold direct to the consumers and a part being used in his own factory in the production of various articles requiring the use of wire cloth in their construction. The original weaving equipment consisted of two or three narrow hand looms of 36-inch width capacity, and no doubt some of the wire cloth woven was sold for paper-mill use.

In 1882, the company began to pay increased attention to the manufacture of paper mill equipment and developed looms for weaving fourdrinier wires, and in a short time this equipment consisted of five narrow hand looms of the type and size in use at that period. This equipment has been added as the business has steadily increased and they now have about fifty of the latest type automatic power looms, among which are several of large size capable of weaving the very wide fourdrinier wires used on fast running newsprint machines. Another development of the works was the manufacture of dandy rolls. The first dandies built were naturally of the type used in 1882, various changes in design and construction being made as time went on. Along in 1892, the spiral truss type of dandy roll was devised and this form of construction has been used successfully ever since.

The development of paper machine construction in the direction of wider faces and higher speeds has necessitated various changes and improvements in the spiral truss type of dandy rolls, but in this as in other lines of development, the Cheney Bigelow Wire Works has kept pace with the march of progress.

Dandy rolls are now built of all sizes, including those of large diameter such as 20-inch and 24-inch, which are now favored by practical paper manufacturers. Both wove and laid dandy rolls are made, either plain or lettered, the lettering ranging from watermarks through the plainest of letters to the most complicated designs. The repairing of dandies is also a feature of the Cheney Bigelow Wire Works which has grown in importance of late years. Many dandies are received yearly from customers to be recovered or relettered, or both, as the case may be, and a well organized department is maintained with a personnel highly skilled in this special work.

One of the departments added in the early history of the

150 Pounds Pressure

CRANE VALVES

2500 Pounds Pressure

Wedge Gate Valve No. 465. Crane makes gate valves of every type.

Oil Separator 03. Crane separators keep steam dry and clean.

Brass Globe Valve No. 7. A many-purpose valve.

Three Valve Lifting Trap. Prevents waste of steam and water.

Back in '78 the pioneers knew Crane quality

Fifty years ago, when the American Paper and Pulp Association was organized, Crane Co. already had twenty-two years of foundry experience behind it and a reputation for quality well known to the paper-making pioneers.

Since then, power development, mechanical improvements, faster speeds, have multiplied the output of the average paper mill by fifteen. The $55,109,912 production from 692 mills in 1880, had risen to $907,347,000 from 746 mills in 1923.

With every step of this expansion, Crane has kept pace. Studying metals, improving valve designs, keeping in touch with advancing needs, Crane engineers have provided materials able to handle ever rising pressures and temperatures and have met each new requirement of efficiency, safety, economy.

Never, in the face of changing conditions, has the slightest deviation been permitted from the quality-standard which brought paper-makers to Crane for piping equipment in 1878 and still keeps them on the valued-customer list.

CRANE

Address all inquiries to Crane Co., Chicago

GENERAL OFFICES: CRANE BUILDING, 836 S. MICHIGAN AVENUE, CHICAGO

Branches and Sales Offices in One Hundred and Fifty-five Cities

National Exhibit Rooms: Chicago, New York, Atlantic City, San Francisco, and Montreal

Works: Chicago, Bridgeport, Birmingham, Chattanooga, Trenton, Montreal, and St. Johns, Que.

CRANE EXPORT CORPORATION: NEW YORK, SAN FRANCISCO, MEXICO CITY, SHANGHAI
CRANE LIMITED: CRANE BUILDING, 1170 BEAVER HALL SQUARE, MONTREAL
CRANE-BENNETT, LTD., LONDON
CIE CRANE: PARIS, BRUSSELS

50 YEARS OF 1878-1927 PROGRESS

company was devoted to the manufacture of cylinder molds. New and up-to-date equipment has been added to this department from time to time, enabling the company to manufacture cylinder molds of extremely large size to meet the modern demands of the paper industry.

As the business has grown, the plant has been steadily enlarged. It is now located in three large modern brick buildings at 417 Liberty street, Springfield, Mass., with Boston and Albany frontage and adequate side track facilities.

The officers of the Cheney Bigelow Wire Works are: A. J. Tucker, president and treasurer; L. E. Bartlett, vice president and general manager; G. H. Graves, assistant treasurer, and R. E. Freeman, secretary.

Cochrane Corporation

THE Cochrane Corporation, of Philadelphia, is the successor of the Harrison Safety Boiler Works, the real origin of which can be traced back to the period of 1854-1856, when Russia was engaged in the Crimean war. At that time, Joseph Harrison, jr., a prominent Philadelphia engineer, was commissioned by the Russian government to construct rolling stock and build railroads for the transportation of troops. A very disastrous explosion of one of the boilers at his shops in Russia caused him to undertake the construction of stationary boilers so designed that destructive explosions would be impossible. After several years of effort, experimenting and testing, he perfected and patented the Harrison boiler, which was constructed of spherical cast iron units, eight inches in external diameter, connected by hollow necks, and held together by heavy bolts passing through their centers. The special, heavy milling machines for cutting the faces of the "units" were built by Hetherington & Sons, Manchester, England, and many of these boilers were built in the early '60's and put into service in that country and exported to the United States. In 1863, Mr. Harrison brought his machinery, patterns, and equipment to this country, and established The Harrison Safety Boiler Works at Philadelphia, where the business was carried on, large numbers of boilers being supplied to paper mills and other industries, particularly throughout the New England States. After the death of Joseph Harrison, jr., the business was temporarily discontinued until purchased by the present owners, the Cochrane Corporation, who built works at 17th Street and Allegheny Avenue, Philadelphia, and continued the manufacture and sale of the boilers.

While carrying on this work, the essential importance of developing equipment for supplying feed water for boilers at approximately boiling temperature, and free from scale-forming impurities, became more and more apparent, and to the engineers of the company was assigned the task of designing apparatus which would accomplish these results. This led to the invention of the well known Cochrane open-feed water heaters, the first of which was constructed and installed in 1883. Since that time Cochrane heaters of some sixteen-million-boiler horsepower capacity have been furnished to the largest and most discriminating steam users in all parts of the world. As exhaust steam from reciprocating engines and pumps was utilized almost exclusively in these feed water heaters, a device for removing the entrained oil was found necessary, and the Cochrane separator was designed, many thousands being furnished for purifying exhaust steam from oil and removing water from live steam for pipes of all sizes from 1 inch to 96 inches in diameter.

Gradually following the adoption of compound, and triple expansion engines, and later of steam turbines, increasingly higher boiler pressures were used, until pressures were reached for which the Harrison boiler was no longer suitable, and as it was too costly to compete successfully with ordinary cast iron boilers for low pressure service, its manufacture was gradually discontinued, and the business organization concentrated on the still further development of other supplementary equipment for steam power plants. Modifications of and additions to, the original types of Cochrane open-feed water heaters were made, including the use of chemical reagents to insure the complete precipitation and removal of scale forming impurities from boiler feed water in the Cochrane hot process water softener, and the introduction of V-notch weir meters within the heater to measure all water passing through it, forming the Cochrane metering heater.

The importance of protecting open heaters, as well as other exhaust steam apparatus, from damage by high pressure, as due to the sticking or failure of the ordinary types of back-pressure valves, led to the design of the Cochrane Multiport back pressure valves, of which thousands are giving highly satisfactory service including large numbers in paper and pulp mills.

Other appliances developed by the Cochrane engineering staff are the Cochrane flow water, the Cochrane weighing meter, the Cochrane strainerless conical filter, the Cochrane multiport drainer, the Cochrane high pressure steam trap, and numerous other well known specialties.

To meet increasing demands for manufacturing facilities, extensions and additions to the original plant in Philadelphia were made from time to time, and in 1907 a large property near Norristown was purchased, whereon a modern foundry plant was constructed, together with pattern shop and pattern storage buildings, casting cleaning and shipping departments, and a testing laboratory equipped with pumping machinery and large calibrated tanks for testing water flow meters. Until 1920, the business was conducted as a copartnership, trading under the old title of Harrison Safety Boiler Works; it was then incorporated under as the H.S.B.W.-Cochrane Corporation, which later was shortened to Cochrane Corporation.

Crane Co.

THE story of Crane Co., manufacturers of valves, fittings, steam specialties, and plumbing and heating materials, starts with a picture of a small frame building in one corner of Martin Ryerson's lumber yard at Canal and Fulton Streets, Chicago, on July 4, 1855, when Richard T. Crane poured molten brass from a small hand ladle into a molding flask. The entire first operation in the original plant of Crane Co. was performed by one man, the founder, who for fifty-seven years was the head of the company. He had arrived in Chicago only two months previously, leaving his home in Brooklyn, N. Y., to seek out an uncle in Chicago who owned the lumberyard mentioned above. On the roof of the small frame building appeared a modest sign reading: "R. T. Crane, Brass and Bell Foundry." Mr. Crane had made a resolution, "To conduct my business in the strictest honesty and fairness, to avoid all deception and trickery, to deal fairly with both customers and competitors, to be liberal and just toward employees, and to put my whole mind upon the business."

From this humble beginning, the business of Crane Co. developed and expanded until today many thousands of manufactured products are listed in the Crane catalogues. Large groups of manufacturing plants are located in eight cities and the company maintains branches, sales offices, warehouses, and exhibit rooms in 155 cities in this country and throughout the world.

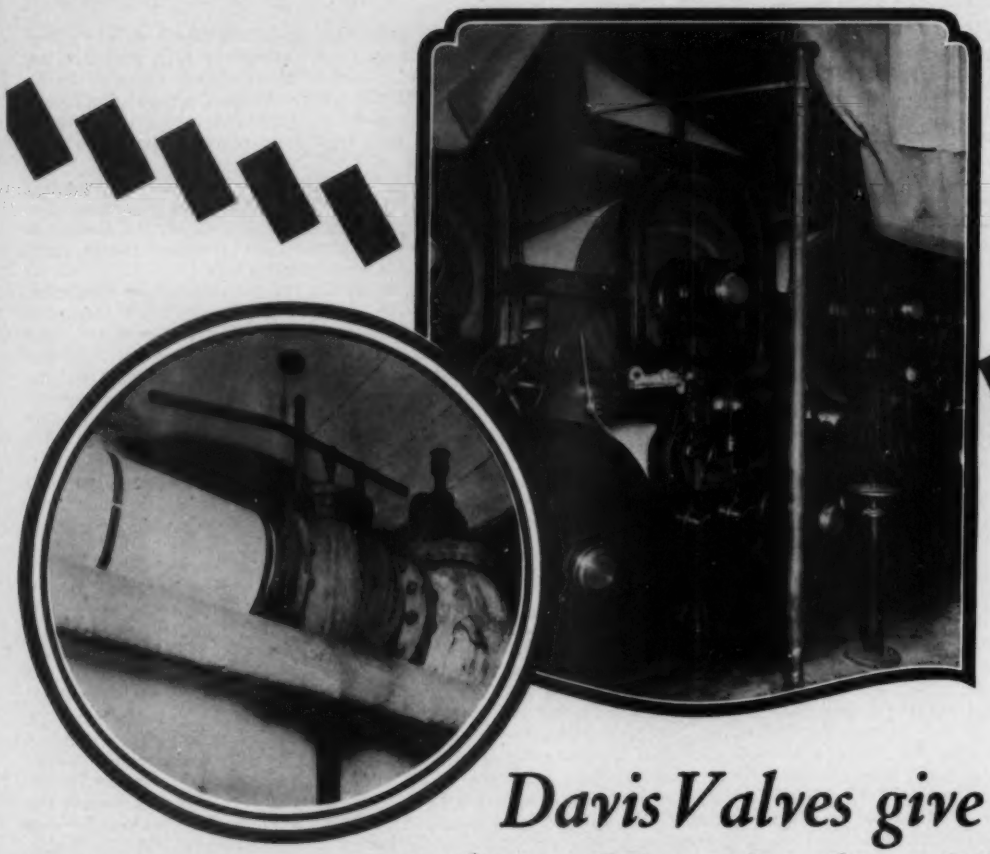
Richard Teller Crane served as president of the company from 1855 to 1912, when he was succeeded by C. R. Crane, who was president from 1912 to 1914, when R. T. Crane, Jr., became president. In addition to the president, there are eight vice presidents in charge of different departments, besides a treasurer, two assistant treasurers and a secretary and two assistant secretaries. The directors number fifteen, with an average service of twenty-nine years, C A. G. Wayman being the Nestor of the group with forty-three years to his credit, and A. F. Gartz, Jr., the youngest, with ten years. The number of employees has increased from 3 in 1855 to upwards of 17,000 in 1927.

Crosby Steam Gage & Valve Co.

THE Crosby Steam Gage & Valve Company, of Boston, Mass., was organized September 1, 1874, for the manufacture of valves and gages under certain patents held by George H. Crosby, of Boston. The business was incorporated in 1875 with a capital stock of $30,000 which was increased in 1882 to $100,000, and in 1906 to $500,000.

The company started manufacturing in East Cambridge in 1874, moving shortly thereafter to a building located on the corner of Milk and Batterymarch streets, Boston. In 1888, the company erected its present factory buildings at Roland Street, Charlestown, the factory being subsequently enlarged in 1894.

The company opened a London office in 1884 and an office in Hamburg, Germany, in 1888. In 1914, the London business



Ten-inch Davis Balanced Valve controlling drying system in the mill of Central Paper Company, Muskegon, Mich.

Davis Valves give smooth, accurate control in Hundreds of Mills . . .

IN THE great majority of mills in this country will be found Davis Automatic Valve Specialties giving dependable service year after year.

The Davis Balanced Valve, such as is used in the installation shown above, is a reliable, accurate means of control for paper drying systems. Davis Back Pressure Valves are another type widely used for controlling condensate from the drums. Davis Float Valves automatically control the admission of water into tanks or reservoirs.

The design of Davis Valve Specialties is based upon over fifty years' experience with the requirements of automatic devices. The design is basically sound and the performance of Davis Valves is smooth, accurate and reliable.

Send for catalogue with full descriptions and detailed information on applications.

The G. M. Davis Regulator Co.
414 Milwaukee Avenue Chicago, Illinois

over fifty years!

DAVIS VALVE SPECIALTIES

1875

50 YEARS OF PROGRESS 1878-1927

was incorporated under the name of the Crosby Valve & Engineering Company, Ltd., to handle its British and Continental business. A Chicago office was opened in 1889, a New York office in 1890 and a San Francisco office in 1919.

Throughout its history, the Crosby Steam Gage & Valve Company has been a leader in the manufacture of high grade gages and valves, was awarded first prize and medals at the expositions held in Philadelphia in 1876, Paris in 1889, Chicago in 1892 and St. Louis in 1904. At the present time the company specializes in the manufacture of safety valves, pressure and recording gages, indicators, gage tester instruments, bronze globe valves and blow off valves.

Darmstadt, Scott & Courtney

DARMSTADT, SCOTT & COURTNEY, importers and packers of paper manufacturers' supplies, 178 South Street, New York, is one of the few companies dealing in paper manufacturers' supplies that can boast of a business existence dating back to 1855. During the life of the firm, it has never had any serious controversies with anyone, or legal disputes of any kind. Certain paper mill customers have been on the books of the firm for upwards of thirty years, and some for forty years.

The firm was established in 1855 by Louis Darmstadt. In 1856, Mr. Darmstadt entered into a partnership with George Scott, and continued the business until Mr. Darmstadt died, about thirty years ago, at which time a son of Mr. Darmstadt, Louis F. Darmstadt, continued the business with Mr. Scott until about 1900, when Mr. James I. Courtney was admitted into partnership. Mr. Courtney was a salesman for the firm, for a number of years, before entering as a partner.

Messrs. Scott and Courtney died in 1918, at which time Louis F. Darmstadt bought out the interests of the Scott and Courtney estates, and has since continued the business as sole owner.

G. M. Davis Regulator Company

THE G. M. Davis Regulator Co., of Chicago, is an outgrowth of the original firm of G. M. Davis & Co., which was founded by G. M. Davis in 1875. G. M. Davis & Co. at that time was engaged in the manufacture of automatic air vents for steam radiators. He added from time to time to his line of manufacture by inventing several automatic pressure reducing valves and steam traps, and the sale of these new devices at that time was a matter of personal introduction and sales effort. For many years, the Davis pressure reducing valve was the pioneer of its kind. In 1885, he invented and manufactured the Davis automatic noiseless semi-balanced type of back pressure valve. The Davis combined pump governor and reducing valve was another power plant accessory added to the line in 1888.

Mr. Davis started manufacturing in a small third story loft. In 1885, he moved to larger quarters, and in 1900 built a large modern factory and office building at 422 Milwaukee Avenue, which remains the present headquarters of the company.

G. M. Davis remained president of his company for thirty-five years and up to the time of his death was active in all branches of the business. His son Geo. C. Davis succeeded him and has conducted the business since as president and general manager.

Starting in the manufacture of one article the G. M. Davis Regulator Company has grown to a manufacturing capacity of fifty-five useful power plant valve specialties and maintains engineering and sales departments employing engineers capable of advising on every power plant economy and valve problem.

D. M. Dillon Steam Boiler Works

THE D. M. Dillon Steam Boiler Works was founded at Fitchburg, Mass., in 1870, by David M. Dillon, who died at the age of 83 on April 27, 1926. His three sons, Frederick N. Dillon, D. Frank Dillon and Walter S. Dillon who had been associated with him since the early '90's now run the business.

David M. Dillon is reported to have constructed the first steel boiler ever made. His early experience was gained at St. John, N. B., where he was born in 1843. In 1860, he decided to try his fortune in the United States, so he secured work in the Atlantic Works, East Boston. During the spring of 1866 he, with Charles Stewart, started the boiler-making concern of Stewart & Dillon which continued for four years. In 1870, Mr. Dillon went to Fitchburg and started the D. M. Dillon Steam Boiler Works, making wrought-iron boilers, penstocks, heavy plate-iron work, smoke flues, etc.

In 1874, the Mechanics Fair was held in the upper story of Quincy Market, Boston, Mass., and as they had to have power in the building, the contract for engines and boilers was awarded to the Putnam Machine Company, Fitchburg, Mass., who sublet the two boilers required to D. M. Dillon. These boilers were to be constructed from the best locomotive flanged iron and were 47 in. in diameter by 16 ft. long, made in four courses. Just at the time the contract was placed, the Bay State Iron Company, South Boston, Mass., had finished experimenting on the making of open-hearth steel, and after examining their product, Mr. Dillon saw no reason why these steel plates could not be used in boilers instead of iron. After a great deal of pressure had been brought to bear upon the directors of the Mechanics Fair, they reluctantly allowed him to substitute steel for iron, though they had little faith that the steel would make good. Mr. Dillon also had a lot of trouble in convincing the Putnam Machine Company that steel could be used in place of iron, but after many arguments and a great deal of hard work, steel was allowed in this case.

Mr. Dillon worked, personally, on both these boilers, to make sure they were constructed exactly right. They were, as stated, 48 in. in diameter by 16 ft. long, with $\frac{7}{16}$-in. shells and $\frac{3}{8}$-in. heads, and were made in four courses, one plate to a course. Previously, boilers were built with two plates to a course. The heads were made in one piece and nicely flanged. The plates for these boilers were the largest the mill had ever rolled, and the whole process was watched carefully, but the plates came out in perfect condition.

It was quite a few years before other boiler manufacturers built any steel boilers and also some time before many manufacturers would allow steel boilers to be used in their plants, as they did not want to take any chances of explosions. At the present time, wrought-iron boilers are almost obsolete.

Dilts Machine Works

THE beginning of the Dilts Machine Works, Inc., business was the establishment about 1866 of a foundry and machine shop by Frank Dilts, of Fulton, N. Y. At first, a jobbing business only was done. Castings were made for the

Original plant of Dilts Machine Works, Inc.

local mills, saw mills, flour mills and the like and some boat hardware was manufactured for the canal boats plying the Oswego and Erie canals.

With the development of the paper business in this part of New York State, Mr. Dilts turned his attention to manufacturing their equipment. The introduction of mechanically ground woodpulp as a paper stock led to his designing and building pulp grinders. Development from Voelter multiple pocket machines with screw feed for forcing the wood against the stone to the heavy large capacity machines with hydraulic feed and 12-inch and 16-inch cylinders was a matter of some years and covered the furnishing of a considerable amount

50 YEARS OF PROGRESS 1878-1927

"Your Paper is Made in your Beaters"

When Grant was Elected President

The first Dilts Beating Engine was built in 1868, about the time General Ulysses S. Grant was elected President of the United States. It was the modern beater of those times.

Since then the growth in the paper trade and demands on machinery have been steadily increasing. For almost sixty years the Dilts Machine Works, Inc., have striven to improve upon that original beater until today the Dilts NEW TYPE beater stands supreme.

During the last half century all of the real improvements in beater design have been made —most of them originating in the shops of the Dilts Machine Works, Inc.

Here was invented the first Rigid Lighter Bar Stands, the first Spring Cushioned Lighter Bar, the first Keyed Type Bandless Roll. Here also the use of special alloy and heat-treated fly bars and bedplates originated.

And now the Dilts NEW TYPE Beater—the first common sense beater, has been developed.

Write about it, know about it, buy it.

This is a view of a 2,000 pound Dilts NEW TYPE beater charged with 3,853 pounds of stock, 9.57% dry, circulating 17.4' per minute, horsepower 80 to 85.

BY WAY OF COMPARISON

At this same mill there is another type of high speed beater installed. Test showed it furnished with 3,600 pounds of stock, 8.16% dry, traveling 6.4' per minute, taking 95 to 97.5 horsepower.

Dilts

MACHINE WORKS, Inc. FULTON, N.Y.

EXPORT OFFICE ~15 PARK ROW~ NEW YORK CITY

50 YEARS OF PROGRESS 1878-1927

of equipment to the pulp mills of New York and the eastern states. During this time, Mr. Dilts had developed and was manufacturing wet machines for groundwood and sulphite, as well as screens and beating engines. In response to a local demand, he also built several complete paper machines and there are several mills in operation in central New York which were completely equipped at the beginning with paper machines, beating engines, pumps, etc., manufactured in Frank Dilts' shops.

On the death of Mr. Dilts in 1893, the business was carried on by his son, F. B. Dilts. Later, B. W. Bennett became associated with Mr. Dilts and the business was incorporated as the

Dilts Machine Works, Inc., Fulton, N. Y.

Dilts Machine Works, Inc. With the decline in the demand for pulp mill machinery locally at least, the Dilts Machine Works, Inc., turned its attention more intensively to the manufacture of beating engines. In this connection they had the help and experience of many mills equipped with beating engines by the elder Mr. Dilts.

A considerable number of installations of iron and wood tub beating and washing engines were in operation in their immediate vicinity. Fulton boasts of fourteen paper machines and from an early period a variety of papers have been manufactured in this city. The development of the Dilts beaters under these favorable circumstances was therefore rapid.

During all of this time, a knife business was being carried on in an adjoining plant by the Taylor Bros. The growth of the paper industry also led to their specializing in paper mill fly bars and bedplates and in rag cutter and chipper knives. In 1913, the Dilts Machine Works, Inc., purchased Taylor Bros. & Co., and added this to their own business of manufacturing beating engines. This addition to their plant provided them, in addition to their iron foundry, machine shop and carpenter shop, with a forging shop and grinding department and furnace and heat-treating equipment. The two plants adjoined each other and their operations have fitted together admirably.

Up to about 1905, little difference was made in the general design of beating engines, and a machine built for high grade papers was practically the same as one built for roofing rags or chip board. On the cheaper grades of paper much trouble was experienced with the bands in the beater rolls breaking, causing further breakage of fly bars and beater tackle as well as endangering the lives of mill workers. On account of this it was decided to develop a "severe duty" beater for this rough service: and in 1905 this company marketed the first practical beater roll without bands—each bar being held in place individually by the use of a hard filler metal. Upwards of 500 of these rolls were built before the Dilts New Keyed Type bandless roll was introduced in 1919. The decision to develop a beater to stand up under such severe conditions proved most profitable, as shortly thereafter the use of the container board and felt roofing became general, and a large majority of the new mills installed Dilts beating engines. At Monroe, Michigan—the pioneer field for container and binder boards, there are some seventy-five Dilts beaters in operation. Again at Lockland, Ohio, there are over sixty beaters operated, most of which are on roofing stock.

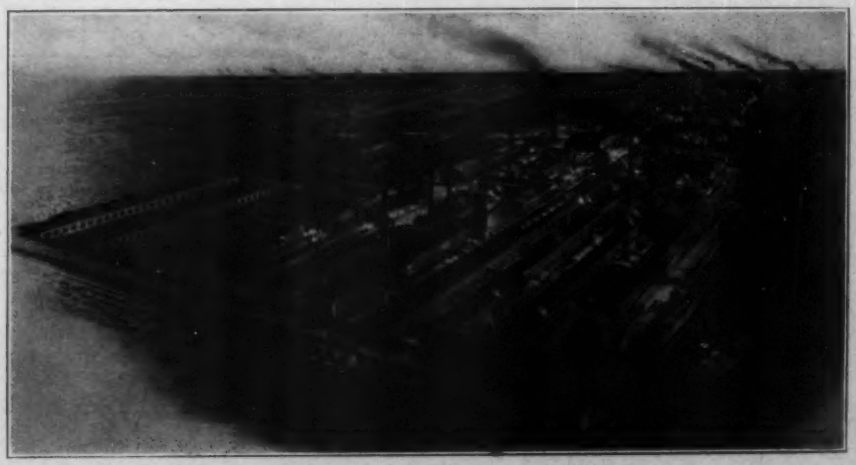
Along with this development the Dilts Machine Works, Inc., first worked out the idea of using alloy heat-treated steel for fly bars and bedplates thereby increasing the life of these parts two to four times as long as could be obtained with ordinary carbon steel. In recent years the demand for higher density beaters prompted the Dilts Machine Works, Inc., to make thorough investigation of this type of engine. As a result the Dilts New Type offset roll beater was developed and has met with much favor especially among the mills making high grade papers, some amazing records having been made. Tests show that it is possible to thoroughly beat and mix pulp in these beaters at a density of over 9½ per cent dry and circulate the stock better than 17 ft. per minute, with a minimum of power applied.

Among other beater improvements developed in the shops of the Dilts Machine Works, Inc., are the Rigid Lighter Stand, the Spring Cushioned Lighter Bar, Double Spring Bar Beater Bearings, Inclined Concrete Bottom, Siphon Cylinder Washer and Extractors for Continuous Beaters.

Henry Disston & Sons, Inc.

BACK in 1840, the firm of William & Charles Johnson was making saws in Philadelphia. In their small plant at the time was a young apprentice—Henry Disston by name—the son of a lace machinery manufacturer of England. The elder Disston died suddenly in 1833, after he had been in this country only three days, leaving young Henry the sole support of himself and an aunt who had come here with his father. The Johnson firm failed. A schedule of its assets showed no money with which to pay young Disston's wages. By an arrangement with the bankrupt firm, young Disston agreed to accept, instead of the wages due him, some tools, steel and other materials used in the manufacture of saws. With the "salvage" from his former employers, plus his practical experience and genius, he started making saws and tools on his own account.

So, in a cramped cellar of an old building adjoining historic Christ Church, in Philadelphia, there was started a business which has since grown to such proportions that there is virtually no country in the civilized world where one cannot



Bird's-eye view of Disston plant, Tacony, Philadelphia

50 YEARS OF PROGRESS 1878-1927

The

DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest

Made by

DRAPER BROTHERS COMPANY

CANTON, MASSACHUSETTS

Woolen Manufacturers Since 1856

REPRESENTATIVES

L. H. BREYFOGLE, Kalamazoo, Mich.; INTERNATIONAL TRADING CO., Philadelphia, Pa.

50 YEARS OF PROGRESS 1878-1927

find, in everyday use, the products of Henry Disston & Sons, Inc., manufacturers of saws, tools, and files; a business with branch offices, factories, and agencies located at convenient points throughout the world. Today the Disston plant in Philadelphia covers more than 65 acres, with 68 buildings. More than 3600 persons are employed by the firm.

When Henry Disston began the making of saws in that cellar, foreign manufacturers were in complete control of the American market. The trade had been convinced that only a saw bearing a foreign trade mark was worth selling. But Henry Disston knew the trade was wrong. He knew his products and he was determined to make the sellers of saws and the buyers of saws accept his judgment. It was a hard, persistent struggle. Persistently he kept at it and finally this persistence forced recognition.

Six years after he had started saw-making in his little cellar plant, he had accumulated enough money to lease an apartment in a shop which was equipped with steam power. There he worked, day and night, adding to the excellence of his product and trying out inventions of his own to increase mechanical production in place of the old hand method. He was progressing nicely when, three years after he had installed the steam plant, the boiler in the building exploded, injuring him and virtually destroying his little workshop. Then he built a small factory—the building which formed the nucleus of the later extensive factory at Front and Laurel Streets, where he continued to manufacture the Disston saw which, in the early '50s came to be recognized by carpenters, lumbermen, butchers, and others which excelled those of foreign make.

Mr. Disston began the making of steel in 1854. Heretofore, the saw manufacturers had difficulty in obtaining steel plates free from flaws and seams. It required careful study and much costly experimenting before the efforts at the Disston works were crowned with success in the discovery of a "mix" or formula for ingredients which resulted in the production of a crucible steel especially adapted to withstand the peculiar strains to which saws are subjected.

In the sharpening of saws, large quantities of files were used, and the Disston entrance into the field of file making occurred in 1866. The success achieved in the quality of this product and the strong demand for all the general classes of files led to the making of a full line.

Henry Disston associated with him, in 1865 the eldest of his five sons, Hamilton, who previously served seven years in the shops, thus changing the title of the firm to Henry Disston & Son. So it remained until 1871 when Albert H. Disston, who had been serving in the accounting department, was taken in the firm. He devoted himself exclusively to the financial and office management end of the business. The title now became Henry Disston & Sons.

Two other sons were given their turn in the factory: Horace C., who was more particularly interested in the steel works, and William, who served eight years in the various factory departments. These sons were also made partners in 1875 and 1878, respectively. Jacob S. Disston, the youngest, who was then pursuing his studies at school in special preparation for duty in the financial department, entered the firm in 1882. Later on, in 1886, the business was incorporated.

But little or no advances had been made in the manufacture of saws previous to the time of Henry Disston, and practically all the improvements in quality, style and methods of manufacture were made by him and his successors. To them is due the credit of placing American-made saws in their present position—at the head of the markets of the world for quality, finish and correctness of pattern.

In 1871 Henry Disston, finding his plant too cramped to handle the constantly increasing business, and unable to secure enough room in the neighborhood, decided to move a part, if not the whole of his establishment, to a more commodious location on the outskirts of the city. After looking around for some time, he finally selected the present site of the works at Tocony, Philadelphia, about eight miles from the center of the city, the first purchase of land being made in the summer of 1871, consisting of about six acres, on which there was a sawmill. This mill was immediately refitted and placed in operation, more for the purpose of experimenting in the running of saws than for the profit in making lumber.

Gradually, other purchases of property adjoining the Tacony site were made until approximately 275 acres of ground were owned, all of which, except that portion devoted to, and intended for, the business purpose of the firm, was laid out in building lots of a convenient size, and public improvements were made toward the establishment of a town.

There are made in the Disston Works many millions of saws annually, including every variety, from the diminutive keyhole saw to the largest circular saws. The high quality of material, temper, design and workmanship put into the Disston goods of 1840 has kept pace with the steadily increasing requirements of saws, tools and files, and with the great growth of the Disston plant itself.

Draper Brothers Company

THE business of Draper Brothers Company, manufacturers of the Draper felt, Canton, Mass., was established by James Draper, who came to this country from England in 1851. He was a fancy knitter and lace maker, and ran a small shop for a few years, and started this company and built its first building in 1856, so 1856 is the initial date of the founding of the company. James Draper died in 1873, and the work was carried on and developed by his sons; from the start the business has shown a consistent and healthy increase.

The original businesss consisted of knitting fancy shawls, hoods and jackets. After a few years, however, the main knitting business became the manufacture of knit fleece linings and nets for the rubber footwear trade, and that has continued to be the chief line of knit goods.

Along in the early '90's some of the Drapers became interested in pulp mills in Maine, and woven felts used in such mills were brought to their attention. They decided it might be a new and profitable field of manufacture, so the necessary machinery to manufacture this kind of fabric was bought, and the manufacture of felts was begun in a small way. It was gradually increased, so that now the business is about equally divided between felts and the old knitting business. The management has always been in the hands of the Draper family, three generations having carried on the business, and one of the fourth generation already being in the mill, and others to come.

Downingtown Manufacturing Company

THE Downingtown Manufacturing Company, of East Downingtown, Pa., has been serving the paper industry for more than half a century. In the early days the firm name was G. & F. P. Miller; later it was called G. Miller & Company, and still later The Downingtown Manufacturing Company, with Guyon Miller and A. P. Tutton as proprietors. Originally, the plant consisted of a gray iron foundry and a machine shop, doing a general jobbing business and employing six or seven men in each department. The productions in the early days were water wheels, creamery machinery, steam engines and beating engines. Later, wet machines, stuff pumps, screens, etc., were added, and still later, fourdrinier and cylinder paper machines.

In 1884, the entire plant was destroyed by fire, but through the energy of Messrs. Miller and Tutton, it was soon rebuilt, better and larger than it was before.

In the early days, a fourdrinier machine in the Megargee mill at Modena, Pa., was in need of rebuilding and the Downingtown Manufacturing Company was engaged to do this work. After completing this job, the company built a complete new fourdrinier machine for Marshall Brothers, Yorklyn, Del. This machine has been running continuously for forty-five years on what is known as fiber paper; i. e. paper used in the making of vulcanized fiber. This machine was followed by another straight fourdrinier for the making of bond and ledger paper, and was installed in the mill of The Aetna Paper Company, of Dayton, Ohio. This machine is still in operation.

Cylinder machines were also built by the company at this time; among the early purchasers of Downingtown cylinder machines being William Rankin, Elizabeth, N. J., and the Peters Paper Company, Latrobe, Pa. Both of these mills are now owned by the Barrett Company.

Machines were also built for McEwan Brothers at Whip-

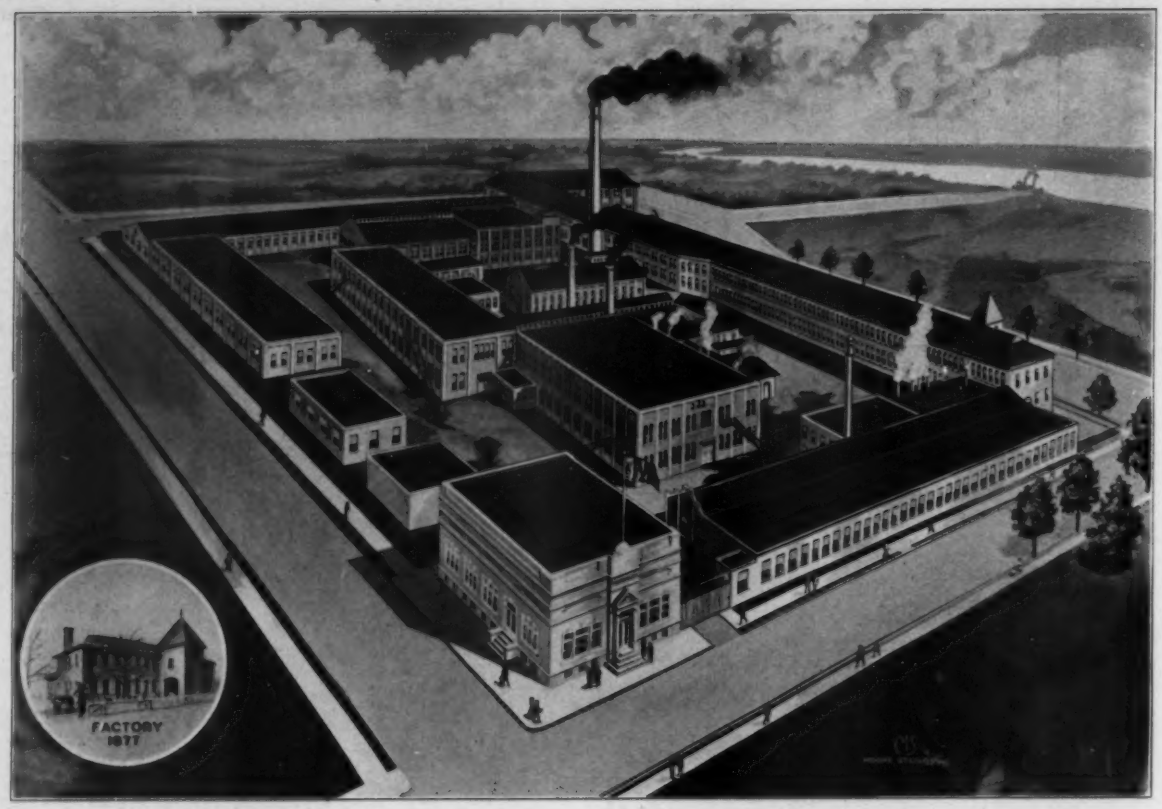
50 YEARS OF 1878-1927 PROGRESS

50 YEARS OF 1878-1927 PROGRESS

Wire can be pitched without affecting inlet adjustments

Four power operated jacks are installed on each side of the Keystone Fourdrinier, which lower the Table Roll and Suction Box Sections independently, in two separate units, onto the rails when making wire changes. These jacks are also used for pitching the wire. The Breast Roll is not moved, but instead the two center jacks on each side are raised or lowered, thereby giving the desired pitch to the wire without disturbing the inlet adjustment.

This is only one of the exclusive advantages obtainable in the Keystone Fourdrinier. Write us for complete information, list of users and ask us to explain the advantages of removing in two sections and how the wire can be changed without affecting inlet adjustments,—no obligation. When you need a Fourdrinier machine to make News, Kraft, Book, Tissue or Specialties, let us bid on your requirements.



This illustration Visualizes Forty-nine Years of Progressive Growth and Unsurpassed Achievements in the Production of

EASTWOOD

FOURDRINIER-CYLINDER-WASHER

WIRES

EASTWOOD WIRE MANUFACTURING CO., BELLEVILLE N.J. U.S.A.

50 YEARS OF PROGRESS 1878-1927

pany, N. J., and for the Hoboken Paper Company, now called the Midvale Paper Board Company, and for the Johns-Manville Company, a cylinder machine was built, which was installed in a mill in Brooklyn, New York.

Some of the earlier purchasers of paper machines have continued to place their orders for new machines and equipment during all of these years.

It is interesting to note that the Downingtown Manufacturing Company built the first fourdrinier machine in this country to make .009 straw paper. This machine was installed in the mill of The Hinde & Dauch Paper Company, of Sandusky, Ohio. It had a suction couch and suction first press roll. As better paper and greater production was obtained on this type of machine, the Hinde & Dauch Company ordered a second fourdrinier in 1921 for their Fort Madison mill. This second machine had a suction couch, a suction first and second press. The line shaft on this machine was equipped with Fafnir ball bearings.

This year Downingtown is installing a third fourdrinier paper machine for the Hinde & Dauch Paper Company Ltd., of Canada, in their new mill at Trenton, Ont. The fourdrinier part is the "Keystone" quick change type, including the very latest and most important improvements, covered by United States and Canadian patents. The suction rolls on this machine are of the Kilberry type, manufactured by Downingtown. It is said that this machine, when completed, will be the finest paper machine in Canada.

Downingtown has endeavored to keep abreast of the times in new and improved designs, and now are building a six-cylinder board machine for the Clifton Paper Mills, of Passaic N. J., which will embody many new features.

In 1926, The Downingtown Manufacturing Company installed a "Keystone" quick change fourdrinier on a 126" machine in the Augustine mill of the Jessup & Moore Paper Company, of Wilmington, Del., for making book papers. This machine started up without any trouble, the sheet being on the winder within a few minutes after turning on the stuff.

The growth of the Downingtown Manufacturing Company can be visualized through the accompanying illustrations. In 1892, the plant consisted of a few buildings as shown. Today, the plant consists of a large up-to-date foundry, having two cupolas, a large cleaning department where the castings are cleaned by means of a sand blast; a brass foundry, a large pattern and wood working department, machine shops and erecting shops, and gives steady employment to about 300 men. The plant now covers about six acres, shown in the illustration.

The present officers of the company consist of Guyon Miller, president, who has been identified with it since its earliest days; A. H. Standley, vice-president; Charles L. Ellis, 2nd vice-president; Ellis Y. Brown, secretary and treasurer; Jacob Edge, assistant sales manager, and George D. Kilberry, engineer.

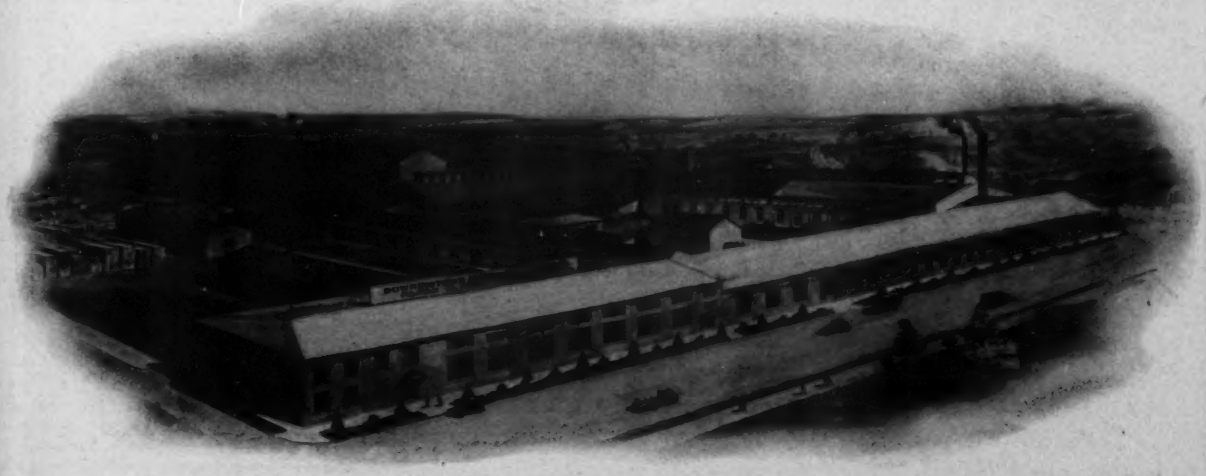
Original plant of Downingtown Manufacturing Co.

Eastwood Wire Manufacturing Company

THE Eastwood Wire Manufacturing Company, of Belleville, N. J., has been engaged in the manufacture of brass and bronze fourdrinier cylinder and washer wires since 1877, and consequently belongs among the list of fifty-year old firms. In addition to wires, the firm is well and favorably known in the pulp and paper industry for castings and fittings made from "Perfection" bronze, a few of the specialties for sulphite mills in the way of valves, cocks and unions being shown in the PAPER AND PULP MILL CATALOGUE, while from the advertisement of the firm in THE PAPER INDUSTRY, an idea can be gained of the growth and development of the business since 1877, contrasting pictures of the original plant and the present great block of buildings being shown there.

Edge Moor Iron Company

THE Edge Moor Iron Company, of Edge Moor, Del., was incorporated in 1869. The four incorporators became the first officers of the company: William Sellers, president; John Sellers, Jr., vice president; Eli Garrett, secretary and treasurer, and George H. Sellers, general superintendent. The plant was built in New Castle county on the Delaware River



Present buildings of Downingtown Manufacturing Co.

50 YEARS OF PROGRESS 1878-1927

1869 1927

TAYLOR, STILES & COMPANY GIANT REG. U.S. PAT. OFF. RIEGELSVILLE, N.J. U.S.A.

RAG CUTTERS

No. 20 MULTIPLEX "GIANT" CUTTER
FOR DIRECT CONNECTION TO MOTOR

Capacity—All You Can Feed to It
Easily Cuts 5 Tons per Hour
Stock Can Be Cut as Fine as Desired
Automatic Apron Feed
Easy of Adjustment
Economical of Power
Built to Last a Lifetime

Pulp Shredders Disc Choppers
Little "Giant" Paper Shredders
Roll Bars Bed Plates

RAG CUTTER KNIVES

TAYLOR, STILES & COMPANY, Riegelsville, N. J., U. S. A.

WATEROUS ENGINE WORKS CO., LTD.
BRANTFORD, ONTARIO, CANADA
Canadian Representatives

R. J. MARX
133-139 FINSBURY PAVEMENT, LONDON, E. C.
Sole Agents for Europe

50 YEARS OF PROGRESS 1878-1927

about three miles north of Wilmington, and the company started operations with a puddling mill, producer mill, rolling mill, machine shops and hydraulic forge shop.

Among some of the early structural work made by the Edge Moor Iron Company was the Manufacturers' Building at the Centennial Exposition in Philadelphia and also many bridges in various parts of the United States, including the structural work for the Brooklyn Bridge, the first one over the East river, open to the public in 1883. This was the first all-steel bridge in the world. The billets were imported from England, as steel billets of the desired quality could not then be made in the United States.

In 1879, the Edge Moor Iron Company started to manufacture boilers and under license from the English manufacturers built a Galloway boiler in this country, an internally fired boiler with conical tubes. In 1888, the structural business was separated from the boiler business and the Edge Moor Bridge Company was incorporated as a separate corporation. While still under the original ownership and conducted at the old plant, it was run independently by the parent company until 1900, when it was sold to the American Bridge Company.

From 1888, the Edge Moor Iron Company gave its entire attention to designing boilers for greater efficiency, and in 1895 the first Edge Moor horizontal water tube boiler was sold. In 1916, the Edge Moor Iron Company brought out a specially designed boiler for the recovery of waste heat from cement kilns, also of the horizontal type with longitudinal drums. In 1922, the Edge Moor horizontal cross drum boiler was introduced and was followed in 1924 by the Edge Moor single pass boiler. The entire production of the Edge Moor Iron Company today is given to the manufacture of water tube boilers of various types.

Farrel Foundry & Machine Company

FARREL FOUNDRY & MACHINERY COMPANY was established in 1848, when Almon Farrel and his son Franklin Farrel started in business with a small plant at Ansonia, Conn. The company was established for the purpose of manufacturing power drives and gears for the power plants of mills which were run principally from waterpower. Shortly afterwards, the manufacture of the rolling mills, calenders and other roll operating mechanisms was started. The brass industry had taken root in the Naugatuck Valley, in which Ansonia is located, and the production of rolling mills for rolling brass led to the manufacture of chilled iron rolls. The first chilled iron rolls were imported from Great Britain, but about 1855 the manufacture of chilled iron rolls was started in this country by the Farrel Foundry & Machine Company. The production of these rolls soon resulted in the building of machine calenders for the paper industry and immediately the Farrel Foundry & Machine Company became well known in the paper industries and has always been a leader in the production of rolls for that trade.

The early calenders had rolls about 60" face. These were gradually increased until when a calender with rolls 144" face was installed, it was thought that the maximum limit had been reached for the production of these rolls, the bottom one of which was 24" or 26" diameter was considered a great feat. The size gradually increased until in about 1913, The Walmsley Company, of England, ordered from Farrel Foundry a stack of calenders 226" face, the bottom roll being 32" diameter. This step meant the increase in size of machines, deepening of casting pits in the foundry and a general strengthening of structure. After the close of the World War, a number of machines requiring stacks up to 238" face were installed in Canada and in this country, and Farrel Foundry & Machine Company has made the rolls for every one of those machines.

Early in 1926, still another step in size occurred. A large company in Canada decided to install four machines, which would require calender rolls 264" face, the bottom roll being 34" diameter and weighing, in the casting, about 90,000 lbs. Although considerable trouble was anticipated in making rolls of this size, yet Farrel Foundry followed out its policy of being ready to serve the paper trade and to be a party to all improvements and advancements. Still again casting pits must be deepened, crane runways strengthened, new cranes added, larger cupolas installed, bigger lathes and grinders designed and fabricated, with a result that the first of these large stacks of calenders was delivered to the customer in November, 1926, and the remainder are well along towards shipment.

Not only are the paper calenders and chilled iron rolls made by Farrel Foundry known in this country but many large stacks have been sent to Sweden, Norway, Russia, Germany, France, Spain, Italy, England and Japan.

Parallel with the production of chilled iron rolls, has come the development of a grinder suitable for grinding these rolls to the great accuracy required, both in regard to straightness of intermediate rolls and to crowning the bottom rolls. The grinding of these calender rolls requires such accuracy over such a great length of face that the usual type of grinders are unsatisfactory and therefore, the Farrel Foundry & Machine Company has been required to build its own grinders. Many of these have been supplied to the paper trade and from year to year improvements have been made in the machine so as to make it easier to operate at the mills, where the operators are possibly less skilled than in a machine shop.

Charles F. Bliss, president of the Farrel Foundry & Machine Company, has been closely connected with the roll business for about forty-five years and is well known throughout the paper industries.

Fitchburg Duck Mills

ALTHOUGH the plant of the Fitchburg Duck Mills was established in 1844, papermakers' felts were not then made to any great extent, the factory being at that time equipped with only two looms capable of weaving goods 120" in width. These two looms were a rather crude affair, and could not manufacture dryer canvas of the weight that is being used at the present time.

Since the year 1910, the Fitchburg Duck Mills has specialized more particularly in the manufacture of dryer canvas and now has looms that will weave up to 220" in width, making canvas in from two to six-ply fabric. A great deal of the product of the Mills is the so-called "Baker" or English weave dryer canvas which is being used in mills making extra fine faced paper which does not require supercalendering process.

Fitchburg Steam Engine Company

THE Fitchburg Steam Engine Company was established in 1871 by John Haskins, and for the first five years, or until 1876, Mr. Haskins operated the company, building small, vertical engines from about five to twenty-five horse power.

In 1874, Mr. Haskins took on Charles Fosdick as a draftsman, and early in 1876 Frederick Fosdick was employed, and the following fall the Fosdick Brothers, Charles and Frederick Fosdick, bought out Mr. Haskins and incorporated the Fitchburg Steam Engine Company.

From 1876 to 1880, the Fitchburg Steam Engine Company specialized on vertical engines up to 75 h. p. and they adapted a reversing link to their vertical engines making a very appropriate engine for yachts. They enjoyed a prosperous business which seemed to be expanding constantly.

In 1880, the company developed the slow speed Fitchburg horizontal engine of the Corliss patern, and about 1886 the high speed engine was put upon the market; several were sold to various electric light companies throughout the country, as they already had an established reputation since 1878 with the Brush Electric Light Company, of Boston, Mass., and Mt. Morris, N. Y., which was perhaps the first company in the United States to make and sell electricity, and with the vertical, the high speed and the slow speed patterns, engines are built from 2000 h. p. down, an ever-growing and prosperous business has been the result.

Frederick Fosdick continued as president until his death in 1924 when Robert M. Sherman was elected as his successor. Charles Fosdick continued as treasurer until his death in 1925, when Arthur A. Tenney was elected as his successor. Frederick Fosdick's son, Richard C. Fosdick, is vice president of the company at the present time; W. I. Harrison is secretary and John F. McNamara, who has been constantly in the employ of the company since 1883, is superintendent.

Yes—Waldron Helped in the Early Development of All These Industries

Coated Paper
Wall Paper
Crepe Paper
Roofing Paper
Artificial Leather
Fabric and Rug Printing
Saturated Paper
Specialty Color Printing
Embossing
Linoleum—Paper Base Goods

BACK in 1827—100 years ago—before machine-made paper other than writing paper was thought of—William Waldron established the business carried on today by the John Waldron Corporation.

The Waldron Company had become leading machinery builders before they produced the first machines for coating paper, more than 75 years ago. From this beginning, the many branches of the vast Paper Converting industries of the present time were developed.

On through the years, new industries, one after the other, were started from ideas for new products and new effects, developed with the machines that Waldron designed and built for the purposes.

The mass of technical information and valuable data gathered during this century of development, today gives Waldron a fund of engineering knowledge possessed by no other organization of machinery builders to these industries.

DID YOU KNOW

Louis DeJonge, probably the oldest coated paper company, treasures a copy of their order, written in longhand 75 years ago to William Waldron for a coating machine.

The first piece of Paper Base Floor Covering ever made was produced on a Waldron Machine.

In the early days it was considered a feat to print two colors on wall paper. Today Waldron machines print 12 and up to 20 colors.

Some special industries are using Waldron Embossing machines 9 feet wide. Quite a difference from the Waldron Embossers that measure only 6 inches in width.

If all the Francke Flexible Couplings produced by Waldron should fail today, the U. S. would practically shut down. The Panama Canal; the Oil supply; 80% of all Electric Light Companies and nearly 80% of all Steel Mills would cease to operate.

Calenders, Winders, Slitters, Reels. Festooning and Drying Equipment.

Embossing and Rotary Printing Machines for Paper of all kinds and Textiles.

CENTENNIAL

JOHN WALDRON CORPORATION

MAIN OFFICE AND WORKS, NEW BRUNSWICK, N. J.

549 W. Washington Blvd.
CHICAGO

Equipment for Coating, Waxing Sizing and Gumming Paper—Treating Awnings and Carpets.

1827 1927 ANNIVERSARY

30 East 42nd Street
NEW YORK

Sand Paper Manufacturing Machinery. Special Machinery. Francke Flexible Couplings.

50 YEARS OF PROGRESS 1878-1927

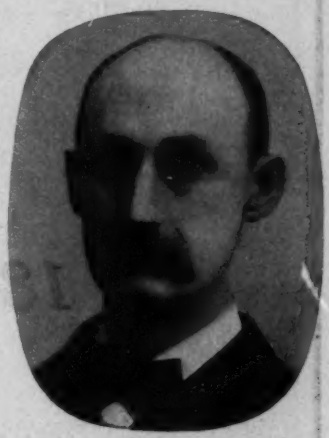
Gilbert & Barker Manufacturing Company

THE Gilbert & Barker Manufacturing Company, of Springfield, Mass., is one of the largest manufacturers of gasoline and oil pumps and tanks. The company was established in 1865—long before the days of specialized methods. In those times, each workman was a skilled craftsman, and it is interestingly said that some of the company's first products half a century ago were designed and built from rough sketches scratched on the dirt floor of the shop yard or drawn with chalk on the floor of the little factory. Today the factory occupies 495,000 square feet of floor space, covers approximately eighteen acres, and embodies the most modern engineering ideas for economical and efficient manufacture of measuring and non-measuring pumps and storage tanks for gasoline, lubricating and paint oils.

The Gilbert & Barker line of equipment includes a type for every oil storage purpose—extension pumps, first-floor tank and pump outfits, first-floor measuring pumps, cellar storage tanks, etc. The equipment measures accurately, keeps a record of deliveries for storekeeping purposes, eliminates fire hazard, and permits the handling of more varieties of oil in less space and with greater cleanliness and efficiency than can possibly be obtained by the use of drums or barrels. Users of Gilbert & Barker oil storage systems are numbered among all classes of industry.

The B. F. Goodrich Rubber Company

THE B. F. Goodrich Rubber Company, of Akron, Ohio, was established in 1870. At this time there were no rubber factories west of the Allegheny mountains. Akron, Ohio, became the rubber center of the world through accident. In 1869, Dr. Benjamin Franklin Goodrich, hospital steward of the Ninth New York Cavalry, dissatisfied with his prospects at the close of the Civil War, went into the oil business. From that venture he drifted to New York, entering the real estate business. After a series of transactions, he found himself saddled with a small rubber factory in Hastings-on-the-Hudson. One day Doctor Goodrich met a friend from the then little village of Akron, Ohio. Doctor Goodrich was induced to go to Akron to discuss with leading business men there, the proposition of moving his factory west. Today twelve such plants could be put in just one of the mill rooms of the present factory. Happily, Doctor Goodrich lived to see the day when his plant was the greatest of its kind in the world.



Dr. B. F. Goodrich

Unfortunately, there are no exact records showing the date when the Goodrich roll covering plant was established, but it was during the early history of the company and rubber covered rolls have been supplied to paper mills in the Middle West as far back as any one now with the company can remember.

In the accompanying engravings, a portrait is shown of Doctor Goodrich, a view of the original Goodrich factory, as well as an airplane view of the present plant.

Original plant of Goodrich, where, in 1870, Dr. Goodrich made his first fire hose

Goulds Pumps, Inc.

GOULDS PUMPS, INCORPORATED, of Seneca Falls, N. Y., dates from 1848, though it had its real beginning in 1844, when iron pumps were made by a firm composed of Abel Downs and Seabury S. Gould. The industry was incorporated as The Goulds Manufacturing Company in 1868, and at about that time the late James H. Gould became the executive head of the industry. It had then attained an eminent position in the iron pump business of the country. In 1870, the entire plant was destroyed by fire except the foundry. James H. Gould assumed the burden of reconstructing the ruined factory and did so with energy and keen foresight, erecting buildings that were in later years added to and changed materially but which served a very useful purpose in the steady and rapid development of the industry. It was during James H. Gould's administration, that the Goulds factory began the manufacture of a line of power pumps known as the triplex type. James H. Gould died in

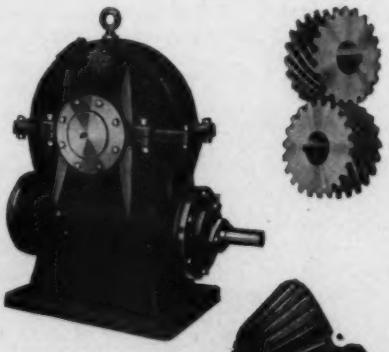
Airplane view of Goodrich factories as they appear today

50 YEARS OF PROGRESS 1878-1927

GRANT GEARS

1877—50th—1927

Anniversary



Complete Stocks ready to ship

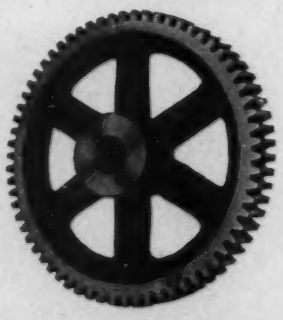
A complete line of

Spur Gears	Ratchets
Bevel Gears	Racks
Mitre Gears	Roller Chain Drives
Internal Gears	Silent Chain Drives
Worms and Worm Gears	Worm Reduction Units

Also, specials made to your specifications, including Herringbone Gears, Spiral Gears, Rawhide Pinions, Micarta Pinions, Etc.

Let us bid on your next order. Our prices are as low as possible for the high quality built into all Grant Gears.

"Makers of Good Gears Since 1877"



GRANT GEAR WORKS

B AND SECOND STREETS, BOSTON, MASS.

50 YEARS OF PROGRESS 1878-1927

1896 and was succeeded by Seabury S. Gould, also a son of the founder of the business. He was made president of the company and continued in active charge of the business until ill health compelled his retirement several years ago. S. S. Gould, was in turn succeeded by his son, Norman J. Gould. who is president of The Goulds Manufacturing Company at this time.

It was during the administration of Seabury S. Gould, that

Original plant Goulds Pumps, Inc.

No. 2 plant was constructed and used for triplex pumps work. The development of the industry from that period to the present is commonly known and generally recalled. The No. 2 plant has been extended from year to year until finally the entire industry found a home on a 70-acre tract.

Iron pumps were probably made at an earlier date in Seneca Falls than in any other part of the country. The Goulds Company was among the first successful builders of triplex pumps. Centrifugal pumps of wide variety and capacity, were placed on the market when that type was first developed to a serviceable point.

When the first buildings of the present plant were designed, the idea of ample working space, ventilation and daylight was applied and that idea has been continued as the plant has been extended.

Graton & Knight Company

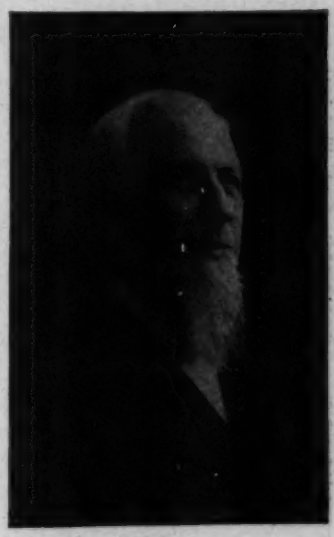
IN 1926 the Graton & Knight Company, of Worcester, Mass., celebrated its "Diamond Jubilee," the completion of seventy-five years of business activity.

H. C. Graton, one of the original founders of the business, is now 96 years of age. It is certainly a remarkable achievement for a man who starts a business to have the privilege of celebrating the seventy-fifth anniversary of that business. This distinction, however, has fortunately come to Mr. Graton, who, with Mr. Knight, established the Graton & Knight Manufacturing Company in 1857, and who now, at the ripe old age of 96 years, can still come occasionally to the plant to look over the business he founded in his youth. Mr. Graton, who is unusually active and alert for a man of his years, takes great pleasure in visiting the plant and talking over old times with the veterans in the organization. Nothing pleases him better than to tell of the starting of the little Graton & Knight business back in 1851. His story certainly confirms the old saying: "Great oaks from little acorns grow."

In 1847, Henry C. Graton and Joseph A. Knight went to work in the belt shop of a Worcester card clothing concern. After a few years of labor at the benches, they had acquired the knowledge, the confidence and the capital necessary to go into the belt business for themselves. So in 1851, in a two-room shop which measured about twenty by sixty feet, the Graton & Knight enterprise was launched. The munificent sum of $800 represented the entire resources behind the firm.

For a time, the entire working and administrative force was composed of two men—the two members of the firm. After the day's work in the shop was done, Mr. Graton posted the books and struck a balance, while Mr. Knight attended to the correspondence. When business fell off, Mr. Graton forsook the currying table and the belt bench and went in search of orders. Often he traveled as far as thirty to fifty miles. Mr. Graton delights in telling of the good old days when he frequently walked back to the little shop rather than trust to the uncertain train service.

The first sales were, of course, made to neighboring manufacturers, and all through the history of the business there has been a real effort made to promote the development of the friendly, neighborly idea. Graton & Knight, today, endeavors to treat all customers as neighbors whether they are located on the Pacific Coast, in New England, or in fact anywhere throughout the world. It is interesting to note that even now some of the original customers secured by Mr. Graton himself still appear on the books of the company.



Henry C. Graton

By 1870 the capital of the company had been increased to about $70,000, the yearly payroll amounted to some $25,000 and annual sales totaled $179,000. From 1870 onward, great progress was made, and today Graton & Knight is established as one of the leading manufacturing concerns of the world, and in its particular industry it is the largest. Graton & Knight products are marketed not only everywhere in the United States but in all countries of the world.

The growth of the Graton & Knight organization from a little $800 concern to its present size was not accidental. It came as a reward for making quality products and conducting its business in a way that made steadfast friends.

Grant Gear Works

THE Grant Gear Works, of Boston, Mass., is in its fifty-first business year. In 1877, Geo. B. Grant, having been graduated from the Lawrence Scientific School of Harvard University, saw the need for better gearing in the manufacturing industries. He proceeded to make a study of this subject with an aim to supply his customers with better gears. In the course of a few years he had published a "Treatise on Gears" which met with immediate approval in the trade, and draftsmen and machinists today when laying out gear teeth, find Grant's Odontograph very helpful.

In the early days, it was necessary for Mr. Grant to make not only gears, but machinery with which to make gears; one of his first machines was a universal gear cutter suitable for cutting spurs, bevels, internals and hobbing worm gears. In 1891 Mr. Grant published his first catalog on standard stock gears carrying in stock 832 different sizes of cut and cast tooth gears. This stock business has grown to a considerable extent and today the Grant stock gears are in universal use.

The Grant Gear Works has grown from a one man shop to a large production establishment now covering a floor surface of 33,000 sq. ft. in a new building with new machinery, so placed that a maximum operating efficiency is obtained.

William A. Hardy & Sons Co.

THE business of William A. Hardy & Sons Company, brass founders, Fitchburg, Mass., was established by a Levi Stevens in 1850 who was bought out in 1865 by William A. Hardy who had been in Stevens' employ. Up to 1876, a general brass foundry business was carried on, but in that year the first cast bronze screen plates were made and a separate department of the business was established for the purpose of their manufacture under the name of Hardy & Pinder.

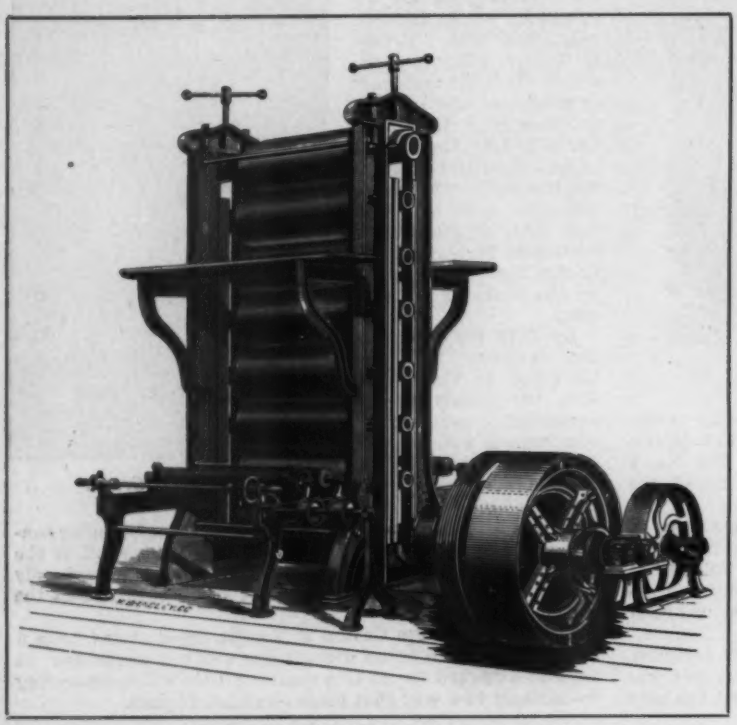
From this time on, the relations of the company with the

50 YEARS OF 1878-1927 PROGRESS

HOLYOKE MACHINE CO.

HOLYOKE, MASS.

INCORPORATED OCTOBER 1, 1863



ABOVE is an illustration from an original engraving of a 36" Web Super Calender made **FIFTY YEARS AGO** by Holyoke Machine Co. as it appeared in their Catalogue of Paper Machinery issued by them at that time.

Makers of

Improved Machinery

for Wood Pulp and Paper Mills

Largest Makers

of Calenders for Paper Mills, Glazed Paper and Cardboard Manufacturers

Cotton, Paper

and

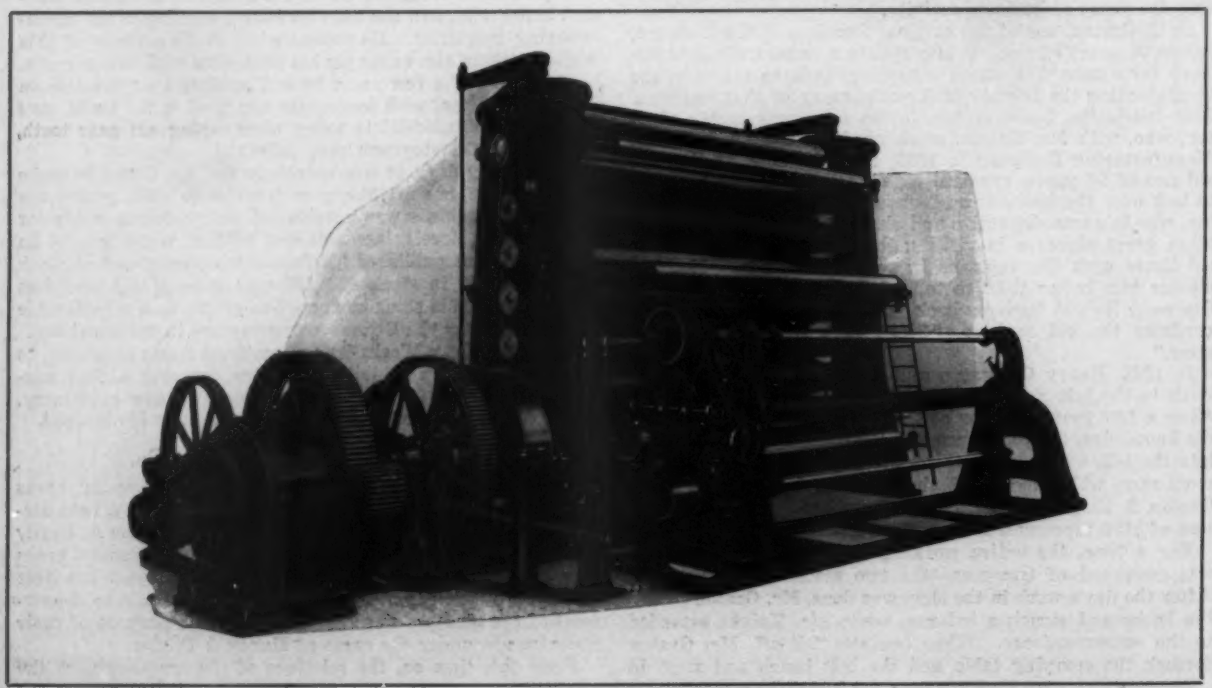
Chilled Iron Rolls

Wood Barkers, Chippers, Wood Pulp Grinders, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps, Presses, Platers, Water Wheels, Governors

WASHING and BEATING ENGINES

of HOLLANDER and UMPHERSTON TYPE

BELOW is an illustration from a photo engraving of one of the Holyoke Machine Co.'s modern, wide-faced Super Calenders. A 146" calender of their make has made a record of 70,000 pounds of paper, twice through, within 24 hours, using about 70 H. P.



50 YEARS OF PROGRESS 1878-1927

paper mills of the United States, Japan and Scandinavia have been very close. In introducing the cast bronze plate, the short-lived brass predecessor was displaced and an appreciable saving in the cost of the manufacture of paper and pulp was affected. In 1902, both departments of the business were consolidated and incorporated by William A. Hardy as sole owner. Today, besides doing a general brass foundry business, the firm manufactures most of the journal bearings and bronze wearing parts of locomotives used by the railroads of New England and its service to the paper and pulp mills not only includes the manufacture of cast bronze screen plates but also all types of rolled copper and bronze plates used for the various types of rotary screens, as well as a complete line of acid resisting bronze valves and digester fittings used in the manufacture of sulphite pulp.

The plant of William A. Hardy & Sons Company has grown from a small foundry employing two or three men to a highly organized foundry and brass finishing shop employing 110. The firm has been located in Fitchburg, Mass., since the founding of the business and in the location now occupied since 1870.

The business now remains in the hands of the sons of William A. Hardy who died July 4, 1912. It has therefore been in effect under the same management since 1865. Present officers are Walter A. Hardy, president; George E. Hardy, vice president; Chester S. Hardy, treasurer, and William C. Hardy, secretary.

Wm. E. Hooper & Son Company

WM. E. HOOPER & SONS COMPANY, of Philadelphia, manufacturers of Hooperwood Dryer Felts, is one of the sixty firms in the United States that has been in the same family for over 100 years. It was founded by Wm. E. Hooper in 1800, who started in business as a sailmaker in Baltimore, Md. In 1856, Wm. E. Hooper, son of the founder, took his brothers into business with him and changed the name from Wm. E. Hooper to Wm. E. Hooper & Co.

In 1865, James E. Hooper, eldest son of Wm. E. Hooper, was taken into the firm; a year later, the name of the firm was changed to Wm. E. Hooper & Sons Co., and James E. was elected general manager. At the death of his father in 1885, James E. Hooper became president and general manager and in 1892, James E. and his brother, Theodore, bought out the other members of the firm.

In 1903, James E. Hooper and his brother, Theodore, entered into a combination with the Mt. Vernon-Woodberry group and other large northern and southern interests, which was called the Mt. Vernon-Woodberry Cotton Duck Association. James E. Hooper was elected president of the combination. In going into this combination, James E. and Theodore Hooper gave up the control of the Woodberry Manufacturing Company, together with their brand, "Woodberry," and all the property which they owned, but continued the old firm of Wm. E. Hooper & Sons Co. as a commission house.

In 1904, James E. and Theodore Hooper sold out their interest in the Mt. Vernon-Woodberry Cotton Duck Association, consisting of the Woodberry Manufacturing Company, as they were not disposed to allow the other mills controlled by the association to use the "Woodberry" brand of duck, which had been established by Wm. E. Hooper. Theodore retired from business and James E. Hooper and his sons under the name of Wm. E. Hooper & Sons Co., built the new Hooperwood Mill, No. 1, and adopted the brand "Hooperwood" as their trade mark. A year later, the company was incorporated as Wm. E. Hooper & Sons Co. Three years after this, July 5, 1908, James E. Hooper died.

Wm. E. Hooper, second son of James E. Hooper, became general manager of the new Hooperwood Mill, built by Wm. E. Hooper & Sons Co., and at his father's death in 1908, he became president of Wm. E. Hooper & Sons Co. At the same time he decided to sell the Hooperwood products direct. In 1917, his interests were bought by Robert P. and James P. Hooper, and shortly after this, Mills 2 and 3 were completed.

Today, after 127 years of experience, the business of Wm. E. Hooper & Sons Co. is carried on by Robert P. and James P. Hooper, men born and raised in the cotton industry, and greatgrandsons of the founder, Wm. Hooper. During this period, steam and electricity have gradually replaced sailing vessels so that today Hooperwood Mills no longer run entirely on sail duck, but have expanded until their products are in use by nearly every industry in the United States. They have been making dryer felts practically as long as they have been used on paper machines.

Holyoke Machine Company

THE Holyoke Machine Company, of Holyoke, Mass., was incorporated under the laws of Massachusetts, October 1, 1863. None of the original members of the Holyoke Machine Company is now living. Stephen Holman, formerly treasurer of the Holyoke Paper Company, was elected treasurer in 1870 and continued his interest in the company until his death in 1912 at the age of 92 years. Sanford S. Stebbins, formerly with the Ames Company, of Chicopee, Mass., became agent in 1872, and was succeeded by Herbert J. Frink in 1882.

Branch works for the principal manufacture of Hercules turbine water wheels and power transmission were established at Worcester, Mass., in 1882, where they now have large facilities for such manufacture and from where a complete development of waterpower and shafting work has been furnished to many woodpulp and paper mills in the United States and Canada.

Herbert J. Frink was elected treasurer in 1903, and president and treasurer in 1906, which offices he now holds.

From the beginning, a large proportion of the product was paper mill machinery, to which was added, with the increase of the manufacture of woodpulp in the United States, woodpulp machinery. The original shop and foundry had a floor space of about 28,000 sq. ft. The present Holyoke plant occupies a floor space of 154,000 sq. ft. Since the foundation of the firm, to one customer they have furnished 122 woodpulp grinders, and to another 100 washing and beating engines. Another customer has received on order in this time 19 web supercalenders and 63 beating engines. To still another customer, they have furnished 68 web supercalenders, a considerable number ranging from 100" to 158" face.

Rag cutters and dusters, washing and beating engines, supercalenders and other finishing machinery was made for all of the paper mills in Holyoke and vicinity, and in succeeding years for many woodpulp and paper mills in the United States and Canada.

With the manufacture of calenders, the Holyoke Machine Company commenced to make paper and cotton calender rolls for which they now have very large facilities to supply a large number of customers throughout the United States and Canada, also for export.

J. H. Horne & Sons Company

THE firm of J. H. Horne & Sons Company, manufacturers of paper mill machinery, Lawrence, Mass., started in Medfield, Mass., in a little stone shop run by waterpower, under the name of Frost & Horne. The Frost was Phineas Frost and the Horne, was John Henry Horne. They started in 1864 and made rag knives, beater-engine roll bars and beater-engine bed plates. Mr. Frost did the selling and clerical work and John H. Horne was a blacksmith and actually made the goods. They were all hand forged in those days as the rag knives were not very large and roll bars were never more than three feet long. There were no steel mills that could roll steel in America suitable for roll bars, so that Norwegian iron was used for the back and English steel was welded on to make the cutting edge. They had one old-fashioned tilt hammer run by waterpower and one grindstone run by the same power and one iron planer, with the necessary furnaces for heating the material.

They dissolved partnership in 1870 and John H. Horne moved to Lawrence. He had a small shop about 40 ft. square. In it he had a trip hammer, a furnace, two grindstones, and one Bibsy & Endicott punching machine. He continued to make rag knives and roll bars and soon after began to make jordan engine bars, but at that time the products were all hand forged.

In 1875, it occurred to Mr. Horne that he might get the steel for roll bars made in Pittsburgh, as the steel industry was developing very fast at that time. He made the trip, interviewed the steel mill and had the roll bars rolled to shape in lengths of about 18 ft. This was the beginning of all-

Water Power Equipment

RODNEY HUNT

New Mill Type

Turbine Water Wheels

Accessory Equipment

Canal Gates	Trash Racks
Hoists	Penstocks
Flumes	Draft Tubes

SEND FOR CATALOGUES

Rodney Hunt Machine Co., 38 Lake Street, Orange, Mass.

RODNEY HUNT

The Experience of 50 Years is of Value to You

HOOPERWOOD
DRYER FELTS

Single and Double Weave

Manufactured as long as cotton dryer felts have been used on paper machines.

Wm. E. Hooper & Sons Company

Philadelphia, Pennsylvania

Mills at **Woodberry, Baltimore** **San Francisco** **Seattle** **New York; 320 Broadway** **Chicago; 325 S. Franklin St.**

50 YEARS OF PROGRESS 1878-1927

steel roll bars for beater engine rolls. He received it in carload lots and would cut off and punch enough to make into roll bars of various lengths; at that time, the bars were used of a size 48" long, which was difficult to forge by hand. After he began to make all-steel roll bars, the engines came to be as long as 6 ft., and he developed different shapes for these roll bars to enable the wood to stay in between the bars in the roll. By having the roll bars thicker in the center than on the back or edge it made the roll woods near parallel in thickness from top to bottom, thus avoiding the working out of the wood as the bars became bent in their rough usage.

The shop became too small for him in 1882, and he built a larger building in a new location in Lawrence and there began to make beater engines and jordan engines. He added to this shop each year for five years, until the space in that location became too small and in 1887 he removed to the present site in South Lawrence and built a larger shop on a large piece of land which he had acquired near the railroad. In 1888, he incorporated the company for $125,000, and still continued to grow, adding land and buildings every few years until at present the corporation is capitalized for $250,000 and has about five acres of land and several buildings where beater engines, jordan engines, paper cutters and paper-making machines are built and are being shipped to all parts of the United States and some to foreign countries. The company started in 1864 with three men. It now employs about 130 men and makes sales of about $500,000 a year. The present officers are: Byron F. Horne, president; Byron R. Cleveland, vice president; John E. Horne, treasurer and clerk of the corporation, and Charles E. Barrett with the above named men, directors. No stock of the company has ever been sold to the public. It has all been made from earnings and put back into the company.

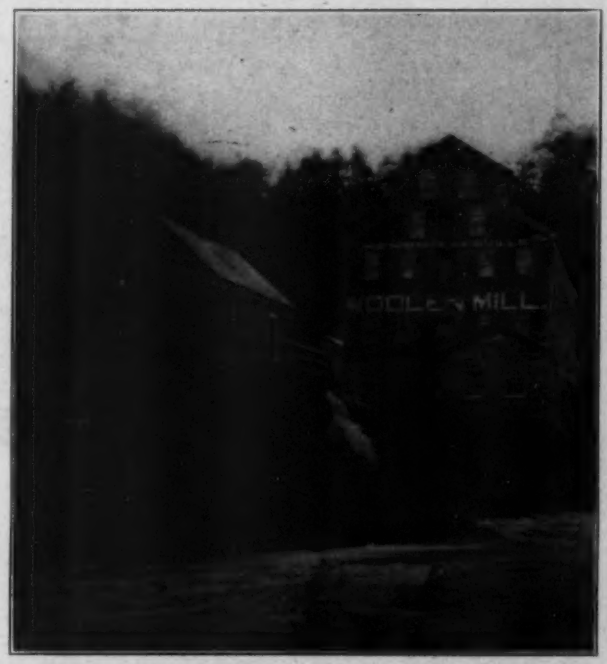
Rodney Hunt Machine Company

RODNEY HUNT MACHINE COMPANY, Orange, Mass., is one of the oldest concerns engaged in the manufacture of waterpower equipment for pulp and paper mills, having been founded in 1865. The records of the company show that wood overshot and breast water wheels were supplied to paper mills in the '60's, one of the earliest being for a mill in Putney, Vt. Wood overshot wheels were soon displacel by iron turbines and the Rodney Hunt Machine Company pioneered the first horizontal shaft mountings of turbine water wheels. Practically all of the equipment from dam to tailrace was supplied to pulp and paper mills as needed and the company included the necessary apparatus such as upper forebay trash racks, gates, hoists, penstocks and turbine flumes. Today the Rodney Hunt Machine Company has requests for repair parts for installations dating back forty and fifty years. Since the advent of electrical generators and motors, the volume of this business is not so great as it formerly was.

Rodney Hunt mill type turbines are now made in a great variety of types and sizes to meet mill requirements. In recent years the company has specialized in the development of paper mill press rolls of wood, in addition to metal and rubber-covered rolls. The company has equipped a number of mills with rolls for both dry and wet service, in sizes ranging from 3 inches to 30 inches diameter.

F. C. Huyck & Sons

THE first paper mill in America began operations in 1690; the first paper mill in New York State in 1768; the first papermakers' felt mill in America was established in 1854, and in 1870, but sixteen years later, beside a small stream that tumbles from the northern foothills of the Catskills through the little village of Rensselaerville, N. Y., was established the mill for the construction of papermakers' felts destined to be



Mill at Rensselaerville, where Mr. Huyck first started to manufacture felts

the forerunner of F. C. Huyck & Sons Kenwood Mills, as known today.

This small mill in which F. C. Huyck was partner, continued its activities for a period of eight years. It must have made good felts for that period, as the business prospered. However, difficulties of securing help and the distance from rail facilities led to a dissolution of the business, Mr. Huyck removing to Albany and establishing Kenwood Mills in 1879.

The second epoch ended fifteen years later and the third in the history of the Kenwood plant began on May 4, 1894, when

Kenwood Mills, F. C. Huyck & Sons, Albany, N. Y.

50 YEARS OF 1878-1927 PROGRESS

KENWOOD

WOOL PRODUCTS

REG. U.S. PAT. OFF.

For Speed
Easier, Smoother Running,
Quality and Finish,
Increased Production
and Profits

KENWOOD FELTS and JACKETS have for years demonstrated their superior value to Papermakers in this and other countries.

The Kenwood mark on a Papermaker's Felt or Jacket is assurance that it is the best for its purpose that can be produced anywhere in the world.

F. C. HUYCK & SONS

KENWOOD MILLS
ALBANY, N.Y.

KENWOOD MILLS LTD.,
ARNPRIOR, ONTARIO

50 YEARS OF PROGRESS 1878-1927

the entire mill was destroyed by fire. Scarcely had the ruins crumbled to ashes when a new site—the present one—was selected at Rensselaer across the Hudson River from Albany. The new plant was completed, equipped with machinery, and actually started on October 16, 1894. It was at this time that Mr. Argersinger, the then partner of Mr. Huyck, retired from the business. Mr. Huyck immediately formed a partnership with his sons, Edmund N. Huyck, John N. Huyck, and two

Kenwood Mills between 1878 and 1894

years later, Francis C. Huyck, a third son, under the firm name of F. C. Huyck & Sons.

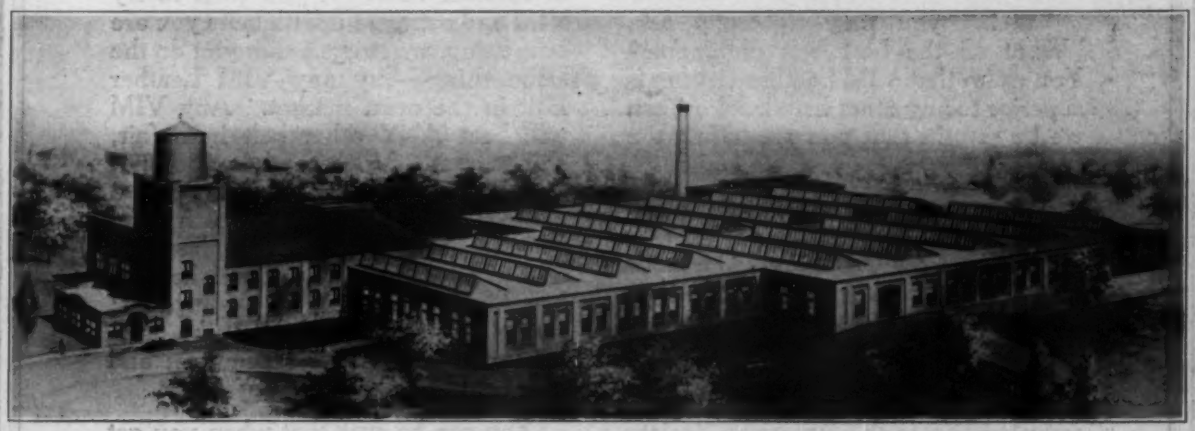
Under the guidance of the father, F. C. Huyck, during the next ten years, the plant grew rapidly. The prophetic vision of his youth remained undimmed and he was constantly on the alert for new methods and new machinery. His undaunted belief in the future of the paper and felt-making industry served as an inspiration in everything that he undertook. An English writer has said of Mr. Huyck: "If a new and improved machine was invented, he bought it at once. If new conditions arose in paper manufacture, he was eager to meet them. He always felt that his business deserved the best machinery and best methods, and demanded of his sons and of all those associated with him that these be secured and adopted. For example, once when traveling in England he learned that raising or napping machines with revolving teasels had recently been invented. On his return, he at once induced a manufacturer of textile machinery to make these improved machines and replaced all of the old style. At another time he learned while in Europe that a loom had been designed and perfected for weaving felts seamless. Before his return he had ordered several of these looms for trial. They were so successful that Mr. Huyck sent one of his sons to purchase more looms and secure their exclusive use in the United States. This was accomplished and I found the mills equipped with a large number of these looms all weaving seamless felts. I was informed that the growing demand for their seamless felts is remarkable. On high-speed machines, felts must often be strained very tight to keep them open and, as is well known, a hand seam is the first point in a felt to give way. In seamless felts, this weakness is entirely eliminated."

Francis Conkling Huyck's death occurred on July 4, 1907, after he had established a business internationally known. The company was shortly afterward incorporated, the eldest son, Edmund Niles Huyck, being made president; John Niles Huyck, the second son, vice-president and secretary; while the youngest son, Francis Conkling Huyck, was made treasurer. John Niles Huyck died October 31, 1914.

In 1918, Holdon M. Ashby entered the organization as general manager bringing with him a wide executive and manufacturing experience.

This, however, is not a story of individuals or individual achievements. Aside from the facts which it has seemed fitting to write of the founder, it is the story of the growth and development of a business. Its success and the importance it has attained in the industry are the result of the efforts of hundreds of men and women working through all these years in harmony and with a spirit of co-operation. Steadily the number of workers has been increased; foremen have been engaged or promoted; skilled accountants, men trained technically in this textile industry, salesmen of high character and ability, and other executives of wide experience have joined the organization and are today inspired by the same ideals of progress and service.

The growing need for larger supplies of newsprint paper, the gradual lessening of the available wood supply in the United States, with the consequent building of additional paper mills in Canada, led F. C. Huyck & Sons to establish their own mill in Canada.



Kenwood Mills, Ltd., Arnprior, Ontario

In 1918, a modest woolen mill, already engaged in the manufacture of felts, was then purchased. It is noteworthy that since this purchase, five distinct and major additions to this Canadian mill have been found necessary to supply the need for larger and more felts.

This mill is known as Kenwood Mills Ltd. The same purpose and ideals guide the conduct of this mill. The same skill and care prevail, the same quality of felts are made as at the Rensselaer plant.

Realizing that felt requirements coincident with the pressure for higher speeds and heavier production of paper machines and the tremendous general development of the paper making industry might be properly served only through the practical application of scientific study, a Kenwood Research Department was established in 1920. Under the personal direction of Doctor E. A. Rees, this work has been highly resultful and of material advantage to the paper industry.

The present officers of F. C. Huyck & Sons are: Edmund N. Huyck, president; Francis C. Huyck, vice president; Holdon M. Ashby, vice president and general manager; James L. Braman, treasurer, and Harold E. Parkman, secretary.

Common Transmission Blunders

BUYING A CHEAP BELT

There is seldom any good reason for buying a cheap belt.

Cheap belts may be excusable for temporary installations where the belting would soon have to be sold as second-hand equipment.

Also, cheap belts may be excusable on drives that are of little importance and that are seldom used.

But on important drives, for permanent drives, and for drives that are used continuously, it is poor economy to try to get along with anything other than the best belt obtainable.

"Well," you may rightfully ask, "What IS the best belt obtainable? You claim that VIM Leather Belting is superior to any other belt, but how can we be certain that you are telling the truth?"

Our reply to that query is: Let us send you reports of tests on VIM by outsiders—tests that were NOT made in our own testing laboratory—tests about which we knew nothing until after they were made. For instance, would you believe what Prof. C. A. Norman, of Ohio State University, reported before the American Society of Mechanical Engineers regarding comparative tests on a special mineral tanned leather belt, balata, rubber, solid woven cotton, and oak tanned leather? He went out into the open market and bought the belts without informing any manufacturer that belts were being tested at the University.

That, we claim, is the RIGHT way to conduct tests. If you wish to try VIM and compare it with belts you are now using, we suggest that you do the same thing—buy any VIM Leather Belt in the open market. Any VIM will beat ANY other belt in a fair, square test. VIM Leather does not deteriorate in stock. VIM is not a cheap belt. The coefficient of friction of VIM Leather Belting is higher than that of any other belt. It weighs less; has higher capacity; is waterproof; resists acid fumes better; can be operated under a higher temperature; and is the STRONGEST belt.

You can be sure that when you get VIM Leather Belting you get the best that can be obtained in belting for important drives, permanent drives, and drives that must give uninterrupted service.

We will send you a copy of Prof. Norman's test upon request.

Publicity Department

E. F. HOUGHTON & COMPANY

P. O. Box 6913, North Philadelphia, Pa.

50 YEARS OF 1878-1927 PROGRESS

E. F. Houghton & Company

THE firm of E. F. Houghton & Company was established in 1865 by Edwin F. Houghton, his brother, Dr. Charles Houghton, an eminent physicist, and several prominent Philadelphia manufacturers. The object of the business was to invent and discover uses for the heavier petroleum products.

While petroleum is as old as history, the first real step in making a large commercial proposition of petroleum and its products, was when Col. Drake and his stillman "Uncle Billy" brought in the first well ever drilled for oil in the United States, on the banks of Oil Creek, in the State of Pennsylvania, about 325 miles west of Philadelphia, in the year 1859.

Of course, it required some time to adapt the known processes of refining which had been previously applied to shale and coal, to the refining of the petroleum. The principal product was kerosene and what was left after this had been removed was called "residuum." It was this residuum that Dr. Charles Houghton aimed to utilize. He is said to have discovered a process for decoloring this and the derivatives therefrom.

It is a strange coincidence that the quality of the petroleum which flowed from Colonel Drake's first well has never been excelled. The original Drake oil produced that variety which is known today as Pennsylvania or Appalachian petroleum, which is produced along the Appalachian Mountain range from Wellsville, New York, through New York State, Pennsylvania, Kentucky, Tennessee and Southeastern Ohio. Dr. Charles Houghton had by accident, therefore, an ideal quality of raw material with which to apply his research efforts.

The field of research soon became so wide that the efforts of one physicist were not sufficient, and in the early part of 1866, a research staff was organized, and Dr. Charles W. Lyons, a young and ardent scientist, was put in direct charge of the laboratory work.

Edwin F. Houghton was an ardent religionist, and in some religious work met Aaron E. Carpenter, a Baptist minister, with whom it was agreed that the latter should buy out the interests of dissatisfied investors. Accordingly, it came to pass that on January 1, 1870, the firm of E. F. Houghton & Company was composed of Aaron E. Carpenter, holding a majority interest, Edwin F. Houghton and two or three of the original partners. The original article produced was a furniture polish; then a belt dressing; later a rust preventive and then a petroleum ointment. The sale of the latter produced the first real profits and for over four years, E. F. Houghton & Company were the only manufacturers of Vaseline. Unable to withstand the competition of The Standard Oil Company, the markets for this product were eventually surrendered to them.

Long before the ointment market began to slip from their grasp, the Houghton Research Staff had perfected lubricating oils of marvelous properties from the petroleum residuum. One of the first of these products was a cylinder oil for the lubrication of the valves and cylinders of steam engines, which obtained the reputation of possessing the very highest qualities. Houghton's Vim Cylinder Oils have continued to be largely and generally used, until quite recently when the Houghton Research Staff originated a new cylinder lubricant known as Houghton's Cyl-tal. A petroleum oil known as Cosmolubric was produced to take the place of sperm oil and its success was almost instantaneous.

Upon the death of Edwin F. Houghton in 1874, Dr. C. W. Lyons was admitted to the firm and remained the active head of the Research Department until his death in 1900. At the death of Mr. Houghton, A. E. Carpenter purchased his interest from the estate, also the interests of the remaining partners, and absorbed Dr. Lyons' interest at the death of the latter. The firm of E. F. Houghton & Company from 1900 until the date of its incorporation under the laws of Pennsylvania in 1910, was owned solely by Mr. Carpenter.

Charles E. Carpenter, son of Aaron E., became general manager of the business in 1893, which position and that of president, he still retains. Upon the death of Dr. Lyons, C. E. Carpenter assumed the position of Chief of the Research Staff, and there also came a gradual reorganization of the entire business. Mr. Louis E. Murphy, at present the vice president and director of sales, was schooled to take supervision over the leather department, the firm having added leathers for mechanical uses to their products in 1896. Mr. George W. Pressell, secretary, started as an office boy in the firm, and was sent to school for special training to later become Chief of the Research Staff, succeeding Mr. C. E. Carpenter.

The firm of E. F. Houghton & Company is a closed corporation. Not one share of the stock is owned outside of those who are directly interested in the business, or members of their immediate families. Pride is taken in the fact that Houghton products are the recognized standards of quality.

Industrial Works

INDUSTRIAL WORKS, Bay City, Mich., was established in 1873. The firm really derives from a gas plant, its founders having been a group of men who owned and operated a chain of gas plants in a number of Michigan cities, including Bay City. There men were James Clements, Ebenezer Wells, Ezra Seaman and Philip Bach, of Ann Arbor, and Edgar A. Cooley. In 1873, which was a year of great financial stringency, the MacDowell Foundry Company was taken over by Mr. Clements, in association with George C. Kimball, general superintendent of the Flint and Pere Marquette Railway, Mr. Seaman, Mr. Wells, Mr. Bach, Mr. Cooley and Charles R. Wells being named as incorporators. The operations of the company were confined at first to repair work of which the immense saw mills in and around Bay City afforded plenty, and the more specialized work of galvanizing salt well piping. The natural developments of this business led to the making of engines, boilers, gang saws, and later on marine engines. The invention of the steam shovel for use in railroads construction work at Grand Rapids dates from the late eighties and this was the beginning of the development of auxiliary railroad equipment by the Industrial Works. Later on, however, the building of steam shovels became subsidiary to the development of Industrial Works as the Greatest builder of railroad cranes, tractor cranes, pile drivers and various types of steam pile hammers.

The year 1886 seems to have been a banner one for the Industrial Works. During this year, the steam wharf train was mounted on a four-wheel railroad car and used around the plant to handle heavy castings and machinery parts. This was the forerunner of the modern locomotive crane.

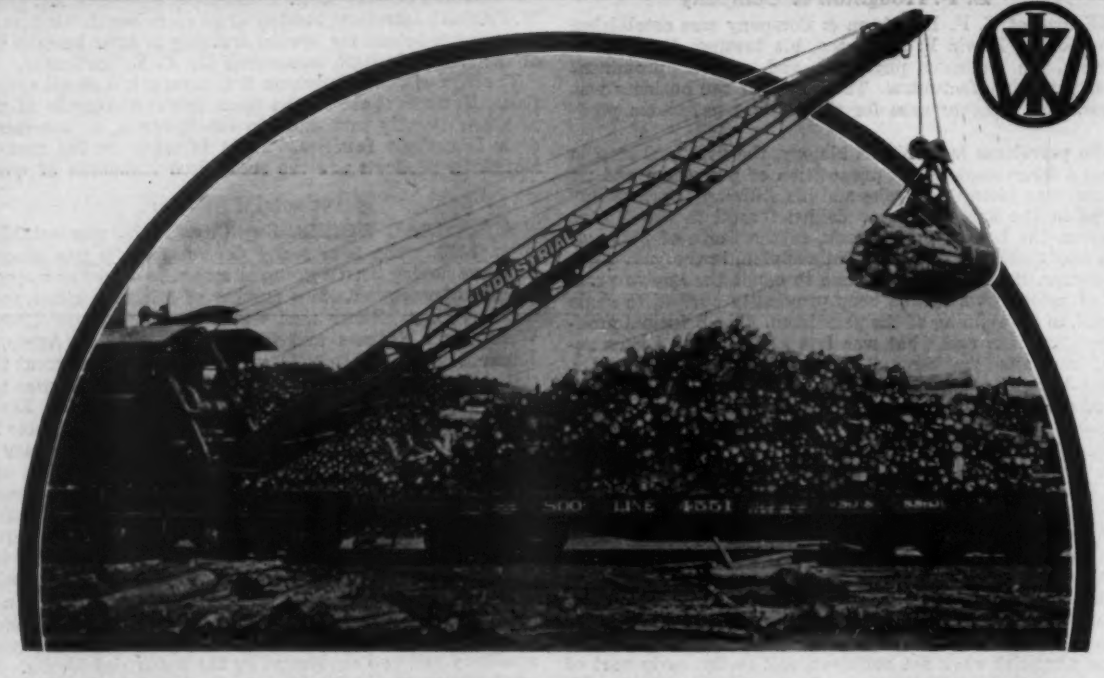
In the summer of 1889, Ernest B. Perry joined the engineering department and several years later was made president of the company and is still in charge. Industrial Works secured a contract with the Exposition Company to supply a number of cranes for erecting and freight handling at the World's Fair in Chicago in 1893. The cranes handled all of the heavy work of the exhibits and made such a splendid showing that the firm was warded the first prize and a gold medal.

The outstanding feature in crane design during the period from 1895 to 1923 was the development of higher capacities. starting with a 12-ton crane in 1893, the capacity of 200 tons was reached in 1902 and this appears to mark the present limit of capacity. From a little building employing twenty-five men in 1873, the Industrial Works has grown until today it covers twenty-nine acres of ground, comprises fifty-nine buildings with 440,000 sq. ft. of covered floor area, and gives employment to about 1,800 people.

Ingersoll-Rand Company

THE history of Ingersoll-Rand Company, 11 Broadway, New York, is coincident with the history of the application of compressed air in the industries. In 1871, the two pioneer concerns now comprised in Ingersoll-Rand Company were established to manufacture rock drills to be used for driving one of the great tunnels of the Lehigh Valley Railroad, and it was the development of the successful rock drill that made possible the operation of transportation systems, mines and mills and the great hydroelectric developments of modern times. Starting with a small shop in which drills and compressors were made, the present world wide manufacturing and service organization of Ingersoll-Rand Company was developed to meet the ever increasing needs of industry. Six plants in the United States, two factories in Sherbrooke, Quebec, and sixty-five branches throughout the world are now maintained to manufacture, distribute, and service Ingersoll-Rand equipment.

The uses of compressed-air equipment are very numerous



FROM PULPWOOD TO PAPER

Forty Cars a Day

CERTAINLY you want to reduce your handling costs—and here's the best way. An INDUSTRIAL locomotive crane equipped with a wood grapple is the most efficient pulpwood handling machine available. In addition to its ability to handle the logs economically, the crane can switch cars and when equipped with a bucket, will load and unload coal and other loose materials to or from cars, bins, hoppers and piles.

Equipped with hook and block, unit loads such as crates, heavy machinery and many bundles that weigh several tons are moved anywhere—any place—any time.

The INDUSTRIAL crane pictured above unloads 40 cars of eight-foot logs a day, day after day. The operator is not "fagged out" after a day's running the INDUSTRIAL. It is the fastest and easiest machine to operate on the market.

Write today for particulars!

INDUSTRIAL WORKS · BAY CITY · MICHIGAN

ESTABLISHED 1875

Atlanta, Ga. Hurt Bldg. | Chicago, Ill. McCormick Bldg | Cincinnati, Ohio Dixie Terminal Bldg. | Detroit, Mich. Book Bldg. | New Orleans, La. Whitney Central Bldg. | New York City 50 Church St.
Philadelphia, Pa. Packard Bldg. | Pittsburgh, Pa. Chamber of Commerce Bldg. | San Francisco, Calif. Monadnock Bldg. | St. Louis, Mo. Railway Exchange | Tampa, Fla. 823 S. Oregon Ave.

50 YEARS OF PROGRESS 1878-1927

in paper mills. Stationary air compressors are used to operate pneumatic tools, paper feeding appliances and hoists for handling rolls of paper and parts of machines. In fact, compressed air is considered an indispensable part of the equipment of a paper and pulp mill. In the modern paper and pulp mill, compressors are installed and the air piped to all parts of the plant, just as are water and electricity. Air hose is used in every paper and pulp mill as the connecting link from the permanently installed pipe line to the tool on machine being operated. It is not too much to say that Ingersoll-Rand products have brought about important economies in paper mill construction, operating and maintenance costs.

Closely associated with the history of Ingersoll-Rand Company is the development of the Cameron pump. Drawing on much more than half a century of experience, Ingersoll-Rand and Cameron engineers have designed complete lines of centrifugal pumps to meet the needs of the paper industry. These include special types of pumps for handling stock, acids, white water, hot water, fresh water, etc.

The present Canadian Ingersoll-Rand Company, founded in Canada about 1890, is an incorporation of iron-working industries established at Sherbrooke, Quebec, some fifty or sixty years ago. It may be said to have grown up with the paper and mining industries of eastern Canada. This company not only manufactures Ingersoll-Rand air compressors, pneumatic equipment, Cameron pumps and similar products, but has also specialized for many years in the manufacture of pulpwood grinders, barkers, chippers, "Ryther" log hauls and slashers, "Paulson" barking drums, "Bird" pulp screens and paper screens, save-alls, "Vickery" felt conditioners and other types of paper machinery. In fact it might well be said that the Canadian Ingersoll-Rand Company is in a position to equip an entire mill, with the exception of such units as fourdriniers, calender stacks and electrical equipment.

Jewell Belting Company

THE Jewell Belting Company, of Hartford, Conn., who are oak leather tanners and manufacturers of leather belting, are among the oldest manufacturing concerns in the United States. The business had its inception in the small town of Winchester on the Ashuelot river in New Hampshire. According to the records kept by Asahel Jewell, he began the tanning of leather in New Hampshire in 1770. The little business was carried on by his son of the same name.

As the manufacturing era replaced the agricultural period. a new market for tanned leather slowly developed. Asahel Jewell had begun to supply leather for belting to some of the little factories in nearby towns.

About 1847 or 1848 the business, which had descended to Pliny Jewell, was moved to Hartford where a leather belting factory was started. Very discouraging it must have been for the pioneer company. For some time the sales of the new product were few and small. But eventually the use of belting and machinery spread, wider belts were tried, and by 1850 the sale of a 20" belt to a cotton manufacturer is recorded. There is no doubt that Pliny Jewell, who was the third person in the country in the belting business, taught many manufacturers to substitute leather belting for the cumbersome and expensive system of gearing for the conveyance of power.

Mr. Jewell's four sons were taken into the concern, which became P. Jewell & Sons. The tanyard was in what is now Bushnell Park, the present site of the State Capitol. Before the Civil War, the firm was making belts 36" to 40" wide, a fact received in England with great incredulity. Bishop, writing in 1864, calls the company the largest of its sort in the world and certainly it was the most famous. The Civil War and the subsequent growth of manufacturing during the latter part of the nineteenth century launched the company on a career of prosperity which has continued.

The 150th aniversary of the Jewell family's connection with the leather industry was marked by the erection of what is conceded to be the most modern belt factory with its equipment in the country. The main building is three stories high, not including the basement; about 400 ft. long and 60 ft. wide. The company manufactures leather belting, strapping, lace leather, round belting, leather cases, etc. The present officers of the company are C. L. Tolles, president; E. H. Bingham, vice president; E. J. Pearson, secretary and treasurer, and H. E. Hitchcock, assistant secretary. The directors consist of Edwin H. Bingham, Charles L. Tolles, Edward J. Pearson, Marshall Jewell Dodge, Arthur Gove Newton, Henry M. Sperry, Charles D. Rice.

E. D. Jones & Sons Company

IN 1867, Edward D. G. Jones, founder of the firm of E. D. Jones & Sons Company, Pittsfield, Mass., arrived in Pittsfield from East Lee which, prior to that date, had been the paper manufacturing center of the United States and where Mr. Jones had been a manufacturer of machinery for paper mills. Shortly after 1867, Mr. Jones formed a partnership with John W. and Henry Clark under the name of William Clark & Company, which started the manufacture of similar machinery. Some ten years later Mr. Jones purchased the plant of Russell & Cleary, manufacturers of boilers and steam engines in Pittsfield and became the owner of this business and its property, the business of William Clark & Co. being consolidated with that of Russel & Cleary.

The firm name of Wm. Clark & Co. was continued until 1890 when Mr. Jones purchased the Clark interests and organized the partnership of E. D. Jones Sons & Co. Associated with him at that time were his two sons, Harley E. Jones and Edward A. Jones, the present head of the business, and Walter T. Noble. This partnership continued until 1893 when the business was incorporated as E. D. Jones & Sons Co. which is today its corporate name. Harley E. Jones died in 1896, and Edward D. G. Jones, the founder of the business, died in 1903. Edward A. Jones was graduated from the Massachusetts Institute of Technology in 1887 and he has been the active head of the business since the death of his father.

The product of the plant is principally beating and washing engines, jordan or refining engines and dusting machinery. The present officers of the company are Edward A. Jones, president and treasurer; Wallace E. Bardwell, assistant treasurer, and Stanley P. Benton, secretary.

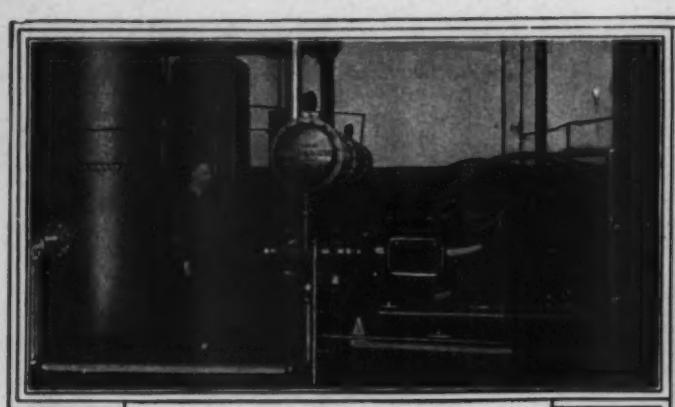
The Jeffrey Manufacturing Company

IN 1877, the Jeffrey Manufacturing Company, of Columbus, Ohio, began the manufacture of a machine for cutting coal mechanically, on which new types of chain for power transmission were used. That machine, the first practical coal cutter was destined to revolutionize the coal mining industry and opened the way for the development of chains for many other industrial uses. At about the same time, a member of the company then known as the Columbus Rolling Mills came to the little one-room workshop of the Jeffrey Company. Noticing several pieces of malleable roller and steel thimble roller chain lying on the floor, he inquired if they might not be used as a drive for the feed rolls in their mill.

These chains had been designed for use as drives on Jeffrey coal cutters; it was found, however, that they worked equally well on the feed rolls. From this humble beginning, the chain department of the Jeffrey company grew rapidly and these two chains were soon being used for bucket elevators, conveyors and drives in several industries.

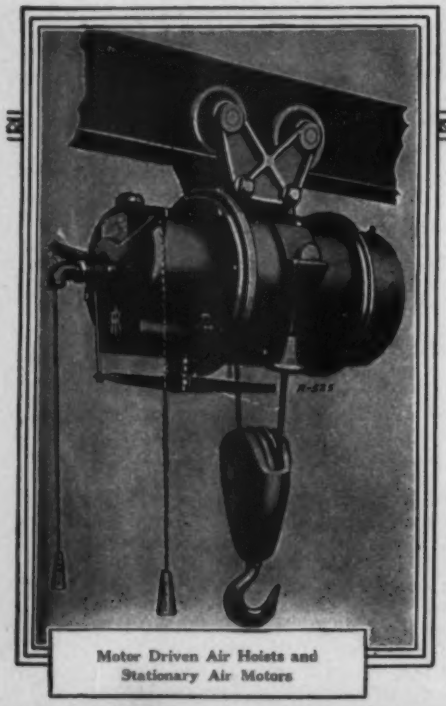
The power transmission problem of stern wheel steamers on the Mississippi river added impetus to the development of chain business. Rubber belts had been used but belts were susceptible to stretching, slipping and weather deterioration. Two of the first companies to use Jeffrey chain drives on their river boats were the Pittsburgh Plate Glass Company and the Mobile firm, Mahler, Bell and Olinger.

Various companies in industries where materials were moved frequently between processes had been experimenting with several types of conveyors. These were principally rope with cross flights for pushing the material but they were not entirely satisfactory. Simple chain attachments were soon developed to carry the flights and a new era in conveyors had begun. Other types of chains and conveyors were the natural development. Perhaps the earliest use of Jeffrey conveyors was by canning companies for handling fruits and vegetables and in strawboard plants as straw conveyors. As early as 1886, the Portage Strawboard Company, the nucleus of the present American Strawboard Company had in use over two



Stationary Compressors and Vacuum Pumps

Portable Air Compressors



Motor Driven Air Hoists and Stationary Air Motors

Rock Drills

Trench Diggers

Pneumatic Tools

"CIRCO" Direct Lift Air Hoists

Canadian Ingersoll-Rand Company manufactures not only Ingersoll-Rand Air Compressors, Cameron Pumps, Drills, Pneumatic Tools, and similar products but also builds:

Grinders Barkers Chippers
"Ryther" Log Hauls and Slashers
"Paulson" Barking Drums
"Bird" Pulp and Paper Screens
"Bird" Save-Alls
"Vickery" Felt Conditioners

And other lines of paper machinery

50 YEARS OF PROGRESS 1878-1927

Serving the Paper Industry

THE skill and experience of Ingersoll-Rand and Cameron Engineers are always available to those interested in the construction of new mills or in bettering operating and maintenance costs in established mills.

The history of Ingersoll-Rand Company starts from 1871, in which year Simon Ingersoll invented the first successful rock drill.

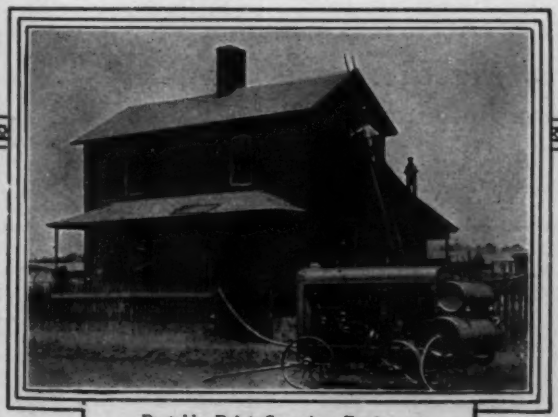
From the small shop required to make these drills and the air compressors to operate them, the present world-wide manufacturing and service organization has been developed to meet the needs of Industry. Eight plants and sixty-five offices throughout the world are maintained for the manufacture, distribution, and servicing of Ingersoll-Rand equipment.

In addition to the Rock Drill, so necessary in the building of power plants and mills, the Company long ago developed Stationary and Portable Air Compressors, Vacuum Pumps, Condensers, Pneumatic Tools, Air Hoists, and other appliances. These products have brought about important economies in mill construction, operating and maintenance costs.

Drawing on more than half a century's experience, Ingersoll-Rand and Cameron Engineers developed a complete line of centrifugal pumps to meet economically the specific needs of the industry. Hundreds of these pumps are now handling stock, acids, white water, etc., in the paper mills of North America.

INGERSOLL-RAND COMPANY — 11 BROADWAY, NEW YORK, N.Y.
A.S. CAMERON STEAM PUMP WORKS
Offices in Principal Cities the World Over
FOR CANADA REFER — CANADIAN INGERSOLL-RAND CO. LIMITED, 260 ST. JAMES ST., MONTREAL, QUEBEC.

Ingersoll-Rand

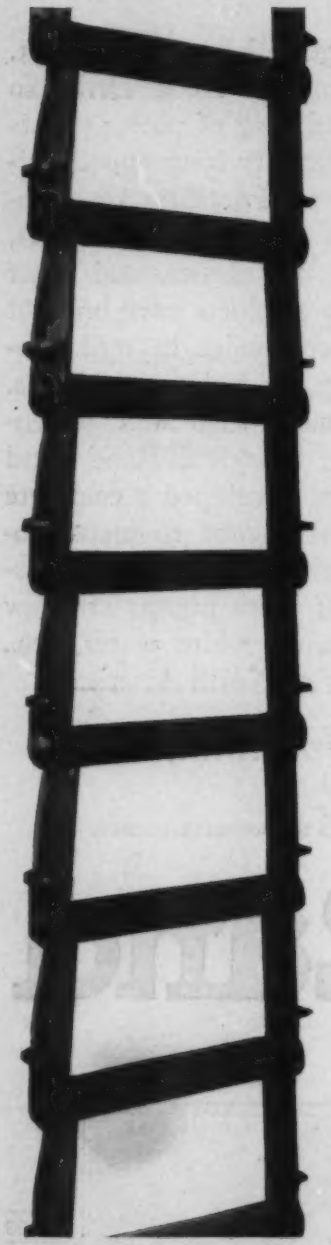


Portable Paint Spraying Equipment
Cement Guns

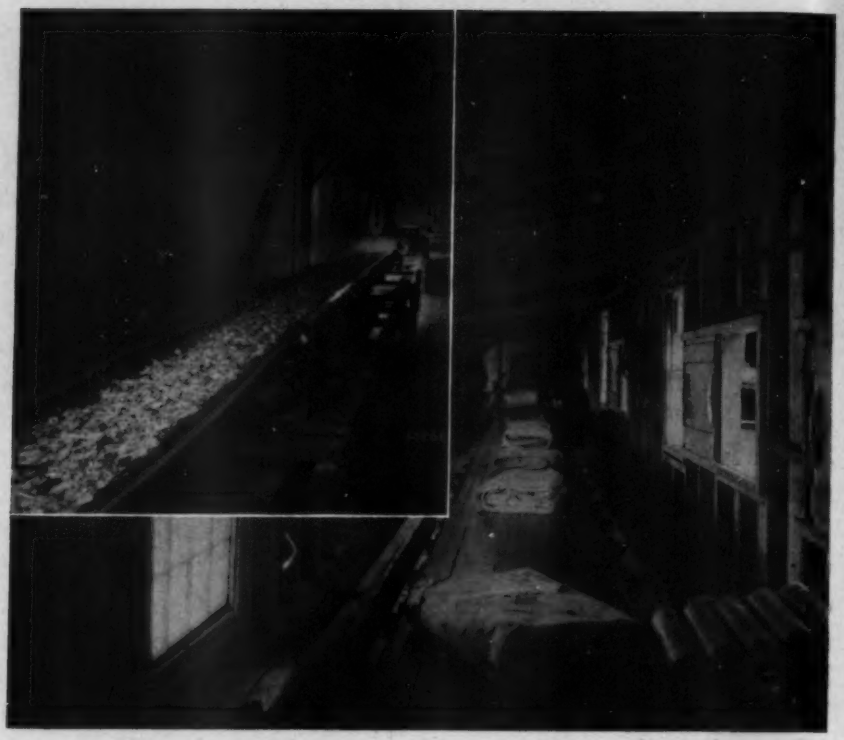
Pneumatic Concrete
Breaker

50 YEARS OF PROGRESS 1878-1927

Jeffrey Chains for Every Service



Jeffrey Reliance Drag Chains for Chip and Ash Conveyors.



The Fare Is Low

Chips, pulp laps, coal and similar materials can ride cheaply between processes if they ride on Jeffrey Belt Conveyors.

Special construction features enable each type to carry its load quickly and with little friction. Power cost is almost negligible.

High pressure lubrication fittings allow each set of idlers to be greased in a few seconds. This saves time and labor. Recessed grease pockets hold a reserve supply of grease. This saves wear on the idlers.

Replaceable bronze bushings or ball bearings are furnished for the more severe hauls. This insures continuous production.

The Jeffrey Manufacturing Company
944-99 North Fourth St., Columbus, Ohio

New York, Buffalo, Rochester, N. Y., Philadelphia, Pittsburgh, Scranton, Pa., Boston, Cincinnati, Cleveland, Charleston, W. Va., Chicago, Detroit, Milwaukee, St. Louis, Denver, Salt Lake City, Los Angeles, Birmingham, Charlotte, N. C., Montreal

50 YEARS OF SERVICE TO INDUSTRY

JEFFREY

MATERIAL HANDLING EQUIPMENT

Jeffrey Products

Elevators
Conveyors
Portable Loaders
Coal and Ashes Handling Equipment
Skip Hoists
Chains and Attachments
Sprocket Wheels—Gears
Crushers—Pulverizers
Sand and Gravel Handling, Washing and Screening Equipment
Locomotives
Coal Mine Equipment
Tipple Equipment
Ventilation Fans

50 YEARS OF PROGRESS 1878-1927

miles of Jeffrey roller chain. Jeffrey conveyors are extensively used in the handling of pulpwood.

Jeffrey engineers have given to industry many of the most important developments in elevating, conveying, transmission, crushing, pulverizing, and shredding machinery. Today, much of the coal which is converted into power to light and warm our homes, drive our machinery and electric railways, and provide many of the comforts we enjoy is mined by Jeffrey coal mining equipment, cleaned ready for shipment in Jeffrey tipples and handled into the power plants over Jeffrey elevators and conveyors and reduced to proper size by Jeffrey crushers.

The present Jeffrey plant covers more than sixty acres of ground. Twenty branch offices carry Jeffrey service to every part of the United States, and many sales representatives extend it to practically every country. In celebrating its golden anniversary, the Jeffrey Manufacturing Company is to be congratulated on its numerous contributions to material handling progress. Material handling is an important factor in practically every industry. By developing machinery to handle materials mechanically, Jeffrey engineers have made possible a continuous flow of materials through the processes of manufacture which is so vital to quantity production; with the heavier handling tasks lifted from its shoulders, labor is happier and able to increase its earnings; and while production has increased many fold, it has been possible in many cases to greatly lower the unit cost.

Kalamazoo Tank & Silo Company

IT WAS just sixty years ago, some time during the year 1867, that what is now the Kalamazoo Tank & Silo Company came into existence in the valley of the Kalamazoo River, under the name of B. S. Williams Company, the chief products being windmills and wooden tanks. There were no paper mills in the valley at that time and instead of being the "Paper City," or even the "Celery City," as it is so often called at present, many of the other industries of the city, aside from paper, were just getting started in modest quarters. By 1889, Kalamazoo had become a great windmill center, half a dozen companies making windmills, and as these mills were usually sold with a supply tank, the little company had expanded greatly and took out articles of incorporation, this time under the name of the Williams Manufacturing Company.

Along with windmill supply tanks, a business had been built up with the farmer in stock watering tanks, and with various industries in pressure, sprinkler and storage tanks of varying sizes.

In the '90's, a Pennsylvania farmer bought a tank for the purpose of storing corn fodder after it had been cut into small pieces while yet green. This was the first commercial "silo" in America, and sensing its importance, every effort was made by Homer Manvel, then president of the company, to develop this necessity on the farm where dairy or beef cattle are raised.

The silo, after all, is but a special tank with a continuous door frame, its chief essential being air tightness for the manufacture as well as for the storage of silage. It is therefore easily seen why the tank and the silo business belonged as much together as a combined pulp and paper mill. Accordingly, in 1902, the name was again changed to that of The Kalamazoo Tank & Silo Company which has been retained to this day.

The valley was gradually filling with paper mills, and as each required tanks of various descriptions, they naturally turned to the nearest source of supply, so that today there are Kalamazoo tanks, wood pipe, settling troughs, sprinklers, agitators, etc., in all of the fourteen mills of the locality.

Elsewhere throughout the country, other huge mills were being erected, mills producing their own pulp, and before long there was a demand for huge blow pits, acid storages, vomit tanks, false bottoms and stock chests, and a great variety of special equipment for which the tank manufacturer was looked to as a source of supply. Growing up with the industry, as this company has done, it was inevitable that it should be called upon to furnish this equipment, and today there are not many paper mills between the Hudson and the Mississippi, and the Ohio and the Great Lakes, which have not had, at one time or another, or which do not have today, a Kalamazoo tank.

Wood silos are still sold, but within the past few years there came the demand for more permanent types of construction, and a vitrified glazed tile became popular. The company then purchased a plant to manufacture glazed tile.

Here, as with the relation between tanks and silos, came another use for the product in the paper mill, and there are many Kalamazoo installations throughout the country of glazed tile stock chests, ash bins, acid tanks, etc., as well as buildings of all descriptions, the tile being more economical in first cost than brick and in many respects a superior building material. In the meantime, a foundry and galvanizing plant had been added, a sheet metal shop and a machine shop. The result is that with the clay plant and the wood shop, the company possesses facilities for a great variety of manufactured requirements, every department on occasion working on some sort of paper and pulp mill equipment. The officers of the Kalamazoo Tank & Silo Company are M. H. Coombs, president; P. B. Coombs; J. S. Rockwell, secretary; and J. E. Anderson, treasurer.

The Kalbfleisch Corporation

THE Kalbfleisch Corporation, with head offices at 200 Fifth Avenue, New York City, and plants for the manufacture of papermaking chemicals at Erie, Pa., Brooklyn, N. Y., Kalamazoo, Mich., Elizabeth, N. J., Chattanooga, Tenn., Waterbury, Conn., and DeQuincy, La., was organized to take over the business of the Franklin H. Kalbfleisch Company, and its subsidiaries. The latter company was incorporated in 1893 with Franklin H. Kalbfleisch at its head. Mr. Kalbfleisch is a son of Martin Kalbfleisch who in 1829 founded the business which bore his name. Franklin H. Kalbfleisch was long associated in business with his father and brothers and was continuously identified with the chemical industry prior to the establishment of the Franklin H. Kalbfleisch Company.

The Kalbfleisch Corporation maintains three large plants for the manufacture of rosin size, and a fourth, now under construction at DeQuincy, La., will begin operations in April and place the Kalbfleisch Corporation in the front rank of rosin size manufacturers in the United States.

Knox Woolen Company

THE business now conducted by the Knox Woolen Company, of Camden, Me., was founded in the year 1864, when the firm of Johnson, Fuller & Co. began the manufacture of paper machine felts. The firm consisted of Albert Johnson, Andrew Fuller, C. C. Newcomb, of Warren, Me., and Samuel Thomas, of Laconia, N. H., inventor of the Thomas loom.

Endless paper machine felts up to this time had all been imported from Europe, but Mr. Thomas conceived the idea of manufacturing them in this country and interested Johnson, Fuller and Newcomb in the enterprise, who leased a building in Camden, Maine, and in the fall of 1864 the first endless paper machine felt made in America was produced by this company. Many obstacles were encountered, some on account of the difficult nature of the product they had undertaken to manufacture, others from inability to obtain proper machinery for the purpose, much of which had to be designed and built by themselves. The obstacles as they arose were overcome and the successful manufacture of felts begun.

Johnson, Fuller & Co. continued in business until 1872 when additional capital was needed to carry on the growing business and a corporation succeeded them called the Knox Woolen Company, which has continued the business until the present time. The present officers of the company are: C. C. Wood, president; C. W. Babb, treasurer and superintendent, and G. A. Babb, assistant treasurer and superintendent.

Lobdell Car Wheel Company

THE origin of the Lobdell Car Wheel Company, of Wilmington, Del., well known as manufacturers of chilled iron rolls and calenders, as well as roll grinding machines, dates from 1836 when the business was established in Wilmington by Bonney & Bush, Mr. Bonney being an uncle of George G. Lobdell, the first president of the Lobdell Car Wheel Company. Mr. Bonney died in 1838 and was succeeded in the firm by his nephew George G. Lobdell, the firm name being changed to Bush & Lobdell. Mr. Bush died in 1855, and in

KNOX "EXCELSIOR" WOOLEN COMPANY

FELTS & JACKETS

CAMDEN, MAINE

An unbroken service record of sixty-two years has placed us in the lead for quality and uniformity of products.

We can be of service to you if you are looking for felts to meet higher speed conditions or desire better finish.

Seamless felts for fast running
Satin style felts for finish
Special felts to meet every condition
Send us your felt problems

50 YEARS OF PROGRESS 1878-1927

1859 the full control of the business passed into the hands of Mr. Lobdell who continued it in his own name until 1867 when the Lobdell Car Wheel Company was incorporated and this corporation has since conducted the business.

Down to 1867, chilled iron car wheels and tires, and miscellaneous iron and brass castings had been practically the sole articles of manufacture, but in 1868 the company started casting chilled rolls for paper machines, etc. The casting of these rolls was at first attended with great difficulty. Few were made and the company had no facilities for finishing them, this work being done by outside machine shops. In a short time, however, the difficulties of casting were overcome and the necessary machines were installed to finish the rolls ready for the calenders. The manufacture of the complete calenders was also undertaken and improved grinding machines for finishing the rolls were made and put on the market.

The business has had a steady and substantial growth, especially during late years and whereas at first the manufacture of rolls did not exceed 5 per cent of the firm's business their present manufacture, together with that of housings and roll grinding machines, equals 30 or 35 per cent of their output.

The present officers of the Lobdell Car Wheel Company are George G. Lobdell, Jr., president; Joseph Stuart, vice president, and Howard L. Seaman, secretary and treasurer.

The Locke Regulator Company

THE Locke Regulator Company, of Salem, Mass., was established in 1871 by the late Nathaniel C. Locke and a short time afterwards the manufacture of balanced valves and other steam specialities such as pump governors, reducing valves and pressure regulators, was undertaken.

The first automatic damper regulator was put on the market in 1871, in those dark ages when the conduct and regulation of water and steam under pressure were first seeing the light of modern invention. Since that time, as each successive "Locke" device appeared, it advanced human knowledge of steam control and made a name for itself for the economy it brought in the use of water and steam.

The late Nathaniel C. Locke was widely known as the "Steam Doctor" and when anything went wrong in any plant that no other mechanical or consulting engineer could eliminate, the saying went: "Let's send for 'Locke' the 'Steam Doctor'."

The "Locke" hydraulic damper regulator has come to be regarded as an item of economy in the use of fuel. Wherever installed, it has shown a saving of 10 to 30 per cent in coal consumption and practically every pulp and paper mill in the United States, Canada and Sweden have a Locke Combination Pressure Regulator installed, which consists of hydraulic damper regulator and balanced valve.

The present officers of the Locke Regulator Company are S. Locke Brown, president; A. G. Locke, vice president and treasurer, and T. C. C. Harris who is director and manager.

Lombard & Company, Inc.

LOMBARD & COMPANY, INC., Boston, Mass., have been manufacturers of pulpstones since 1869, but the firm was established in 1827, so that this year it is celebrating its 100th anniversary. When it is recalled that the process of grinding wood for the manufacture of mechanical pulp dates no further back than 1867, so far as commercial operation in the United States is concerned, Lombard & Company may be fairly regarded as pioneers in the importation and manufacture of pulpstones. In a copy of the "Lombard News Letter," published a few years ago, there is reproduced an order from the New England Wood Pulp Company, of Boston, dated April 29, 1869, which calls for "twenty more grindstones like the others which we have ordered. This with our previous order will make sixty and we wish you would have them all completed as soon as you can." Again in 1871 we find the Androscoggin Pulp Company ordering two stones. Lombard & Company made grindstones long before such stones were used in woodpulp manufacture. The firm was in a position therefore, when the groundwood industry started to make a better selection of the kind of stone required for this industry than others who were limited in their knowledge and sources of supply. Starting in as an importer of pulpstones from England, Lombard & Company now own and operate selected quarries of English stone and are thus enabled to duplicate shipments exactly.

As every manufacturer of groundwood pulp knows, the process of grinding has undergone many changes since Voelter's time. Mr. McGill, president and treasurer of Lombard & Company possesses an old photograph showing the Olin Scott grinder of the early days, a two-pocket type with which the manufacturers guaranteed to produce 1,500 lb. of air-dry pulp a day.

With the development of grinders designed for higher speed and greater pressure, stronger stones became necessary, and practically all of the qualities of stone that were found to be suitable in the early days of groundwood pulp manufacture have since passed out of use.

Louden Machinery Company

THE Louden Machinery Company, of Fairfield, Iowa, makers of monorail equipment for overhead lifting and conveying work in the paper industry, was established in 1867—sixty years ago. The founder, William Louden, although in his 86th year, is still active in the business, daily working on new designs and new inventions for the saving of man-power and the speeding up of manufacturing work.

A complete Louden system includes overhead track and trolleys, switches, traveling cranes, monorail scales—in fact a full line of conveying equipment utilizing the ceiling for the transportation of materials throughout every department of paper manufacture. It is capable of going from floor to floor and from building to building. A New York office is maintained in the Grand Central Building, Forty-fifth Street and Lexington Avenue.

D. Lovejoy & Son

D. LOVEJOY & SON, manufacturers of fly bars, bed plates and other varieties of machine knives used in pulp and paper mills, claims the distinction of being the oldest firm of its kind in the United States. The plant was established in Lowell, Mass., by Daniel Lovejoy in 1848, nearly eighty years ago, and it has never been out of the family. Elwyn W. Lovejoy, the present head of the company, is a son of the founder, and he is assisted by his own son Roy F. Lovejoy, a graduate of the Massachusetts Institute of Technology. Branches of the firm have been established at New Orleans, St. Louis, Atlanta and Anderson, Ind. The western plant has been enlarged and improved until it exceeds in size and capacity the home plant at Lowell, Mass., and is said to be the best equipped knife factory in the United States. It is asserted by Lovejoy that "there is nothing that can be called a machine knife or cutter that the firm does not make and that of the best quality," because there is nothing else made by it but machine knives, which includes fly bars and bed plates.

The Lunkenheimer Company

THIS year marks the sixty-fifth anniversary of The Lunkenheimer Company, which was founded in Cincinnati, Ohio, by Frederick Lunkenheimer in 1862 under the firm name Lunkenheimer Brass Works, F. Lunkenheimer, proprietor. In 1889, the name was changed to Lunkenheimer Brass Manufacturing Company, and in 1893 the firm was incorporated under the present name of The Lunkenheimer Company. This company are manufacturers of bronze, iron and steel valves of every description and in all standard sizes. It also manufactures boiler mountings, lubricators, oiling devices, oil and grease cups, and other engineering specialties.

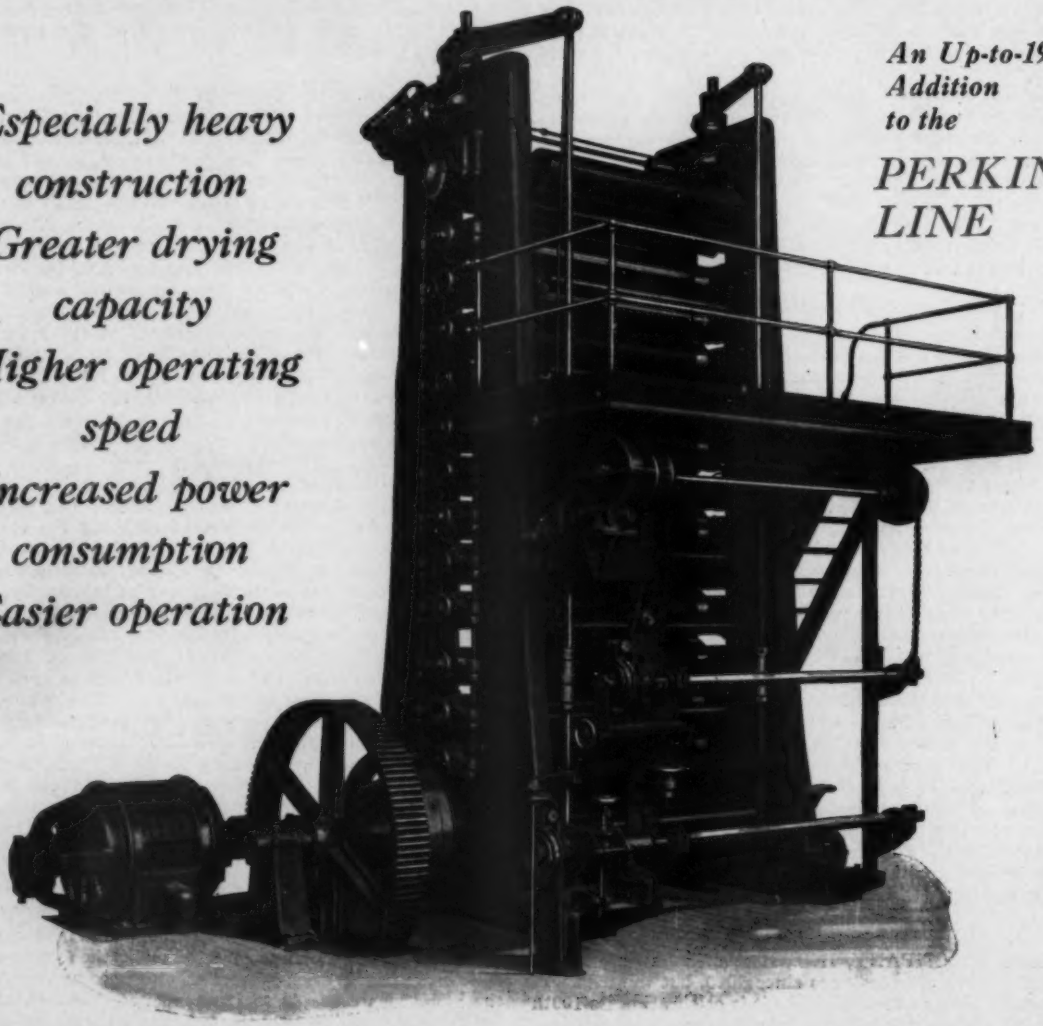
Merrimac Chemical Company

MERRIMAC CHEMICAL COMPANY, manufacturers of chemicals for pulp and paper mills, with offices at 148 State Street, Boston, and works at Woburn and Everett, Mass., was founded in 1853 when there were no other manufacturers of chemicals in New England. The original plant at Woburn was built by Robert B. Eaton, of Woburn, and was known as the Woburn Chemical Works. It was a very small plant, and its methods of manufacture were of necessity primitive, but it soon became known for the excellence of its products. In ten years the business had grown to such an extent that Mr.

1873—PERKINS PRODUCTS PAY BECAUSE PRACTICAL—1927

PERKINS 14-Roll GLASSINE WEB SUPERCALENDER

Especially heavy construction
Greater drying capacity
Higher operating speed
Increased power consumption
Easier operation



An Up-to-1927 Addition to the
PERKINS LINE

MORE *and* BETTER GLASSINE

Less broke—greater transparency
Higher finish—less curl

Write B. F. PERKINS & SON, INC., Holyoke, Mass., U. S. A.

PERKINS

50 YEARS OF PROGRESS 1878-1927

Eaton could not attend to both manufacturing and marketing, and so a company was formed. This company was incorporated under the laws of Massachusetts in 1863 as the Merrimac Chemical Company. Development was rapid and in 1899 the plant of William H. Swift & Co., of Boston, was acquired, but perhaps the most signal event in the history of the Merrimac Chemical Company was the purchase in 1917 of the entire plant and good will of the Cochrane Chemical Company, of Everett, Mas. This company had a history coeval with the Merrimac, having been founded in 1847 by Alexander Cochrane. In 1924, the Merrimac Chemical Company added to its already extensive interests and holdings by purchasing the Anderson Chemical Company, producers of solvents and lacquers. The officers of the Merrimac Chemical Company are Salmon W. Wilder, president; Charles Belknap and Frank G. Stantial, vice presidents; William McNear Rand, treasurer; William I. Warren, treasurer; Harold O. Wellman, secretary.

Page Belting Company

PAGE BELTING COMPANY, manufacturers of transmission leather belting and leather specialties, Concord, N. H., began business in Manchester, N. H., in 1868. The original plant consisted of a room about 40 ft. square and the founders consisted of the Page brothers and their father, an old-time tanner. As the business increased, the corporation was moved to Franklin, N. H., where more adequate floor space was available and the facilities were better. The business still growing, search was made for a more favorable site and the last move was to Concord where the main office and factory are now located. Buildings were added from time to time and large, modern brick structures were built in 1894 and 1906 which brought the whole plant up-to-date.

Page Belting Company was among the first to introduce the use of waterproof cement, some twenty-six years ago. The use of this makes it possible to run leather belting satisfactorily in moist conditions and in places where formerly rubber belts were required. The company also engaged early in the manufacture of leather-linked belting and hydraulic valves and packings.

Parks-Cramer Company

PARKS-CRAMER COMPANY, engineers in industrial piping and air conditioning, Fitchburg, Mass., had its origin in 1872 when Gilbert M. Parks formed a copartnership with John H. Carpenter. This copartnership continued for fourteen years, when Mr. Parks purchased the interest of his partner and continued the business alone until it was incorporated in 1901. The business conducted by Mr. Parks started with plumbing, evolved into house heating and gradually worked into mill piping, of which there was comparatively little fifty years ago. Then piping for fuel economy became a large factor. In 1908, with the idea of further expanding the piping business, the company began to sell the "Turbo Humidifier," an invention of the mechanical superintendent of the Amoskeag Mfg. Company. In 1908, after having acquired an interest in the business of the Merrill Process Company, a new corporation was formed known as the Parks-Cramer Company which took over the businesses of the G. M. Parks Company and Stuart W. Cramer, of Charlotte, N. C., retaining practically all of the employees of both old companies. The organization formed at that time remains very much the same today. The company maintains an engineering force of from twenty to twenty-five people divided about equally between Charlotte and Fitchburg, with four more in Boston. The company publishes several house organs and sales books, besides a text book on "Air Conditioning in Textile Mills."

Parks-Cramer Company specializes particularly in the fabrication and assembling of industrial piping and the manufacture of air conditioning apparatus.

Pennsylvania Salt Manufacturing Company

THE Pennsylvania Salt Manufacturing Company, of Philadelphia, began the production of sulphate of alumina as a substitute for potassium alum nearly sixty years ago, and the first carload tank car of liquid chlorine was shipped from the Pennsylvania Salt Manufacturing Company's plant at Wyandotte, Mich., in 1909.

The Pennsylvania Salt Manufacturing Company has passed its seventy-fifth year as a business corporation, for it was organized in 1850. The growth and development of the company has been large and consistent, two liquid chlorine plants being now operated, one at Wyandotte, Mich., and the other at Menominee, Wis. In the same way, the company operates two plants for the production of iron-free sulphate of alumina or papermakers' alum at Natrono, Pa., and Philadelphia, respectively.

B. F. Perkins & Son, Inc.

B. F. PERKINS & SON, INC., has had a business existence of fifty-four years, from the time when Benjamin F. Perkins, father of the present chairman of the board of directors, J. Lewis Perkins, Sr., started a small job shop to serve the paper mills in Holyoke. In 1882, the manufacture of calender rolls was started, but Mr. Perkins did not even own a press, sharing one with a paper company in Holyoke. In 1886, he purchased a press, and two years later moved to a one-story wooden building with an equipment of two presses. Continual growth made necessary the purchase of a larger building in 1900. Shortly after the purchase of these new quarters, Benjamin F. Perkins died and the direction of affairs devolved on his son J. Lewis Perkins. In the meantime, new lines were added to the company's products most of which consisted of paper mill apparatus and equipment.

In the early '90's, Mr. Perkins purchased a small paper mill in South Hadley for the manufacture of calender roll paper. The limited production of calender rolls did not keep pace with the ability of the paper mills to produce paper and he later started the production of tissue paper to keep the paper mill busy.

The tissue paper business was continued as a department of B. F. Perkins & Son, Inc., until the incorporation of the company in 1906 when it was segregated and incorporated as the American Tissue Mills which is still controlled by J. Lewis Perkins.

While calender rolls form a large part of the Perkins Company's product, it is equally well known in the pulp and paper industry as the manufacturer of Mullen paper testers, tensile testers, rag and stock cutters, paper dampeners and bleach ejectors. In addition to patented forms of calender rolls and calenders the Perkins' line includes embossing rolls and calenders, web supercalenders and glassine supercalenders; sheet calenders, platers and granite rolls, chilled iron rolls and cotton and paper rolls. The officers and chief executives of the company are J. Lewis Perkins, chairman; J. Lewis Perkins, Jr., president; William H. Bond, vice-president; Benjamin F. Perkins, treasurer; Paul W. Bidwell, general manager; A. C. Lade, sales manager; C. L. Strong, works manager and chief engineer; Mark Pearson, textile engineer, and J. C. Cunningham, paper mill expert.

Perkins-Goodwin Company

THE Perkins-Goodwin Company, New York, has been in business continuously for upwards of eighty-one years, having been originally established as a paper stock concern by Coe S. Buchanan in 1846. In the development of the business, George F. Perkins and Edward Goodwin were taken into partnership when the firm name was changed to Buchanan, Perkins & Goodwin. This was in 1865. In 1869, upon the retirement of Mr. Buchanan, the name of the firm was changed to Perkins & Goodwin which was retained until January 1, 1881, when Perkins, Goodwin & Co. was formed by the admission of Frank Squier and J. Fred Ackerman as partners. Mr. Goodwin died in March, 1895, and at the close of 1904 Mr. Perkins retired. In May, 1905, the office of the company was moved to 72 Fifth avenue and in the same year Mr. Squier retired from the company.

The business was incorporated under the laws of the State of New York, January 1, 1906, with the corporate name Perkins-Goodwin Company, when Major Ackerman was elected president; John H. Duffy, vice president; Eugene F. Crowe, secretary, and Fred Vilmar, treasurer. Mr. Vilmar retired at the end of the year 1907, and since that time several changes have taken place in the personnel of the company. John H. Duffy succeeded Major Ackerman as president when the latter died in 1908, and Mr. Duffy after a fine record of forty-five years' service retired in November 1918. Eugene F. Crowe

Long Ago

Sixty years ago we built
our first paper machine.
Through the long procession
of Paper Machinery development
Our Engineers have successfully met
The Various problems pertaining to the
industry.
As time progressed the position
Of this company has been strengthened
By consistent service to customers.

Ask Us

The Pusey and Jones Corporation

Wilmington, Delaware

then became president, but died suddenly August 27, 1921, whereupon Louis Calder became president and Fred W. Westlake was chosen vice president and treasurer. Mr. Westlake passed away after a short illness on November 11, 1926 and was succeeded by John Atkins.

Perkins-Goodwin Company acts as sole agents for several of the largest Scandinavian and Continental pulp mills engaged in the manufacture of sulphite and sulphate pulps. It supplies the raw materials for the manufacture of paper to many of the leading mills here and in turn markets a large tonnage of the finished product. The officers of the company are Louis Calder, president; John Atkins, vice president and treasurer; William H. Anders, secretary, and Charles Teale Rue, assistant secretary. These officers have been associated with the company for thirty, twenty-one, twelve and nineteen years respectively and together with James A. Brady and Knut A. Bache constitute its board of directors.

Philadephia Quartz Company

THE Philadelphia Quartz Company, manufacturers of silicate of soda in its various forms, wil soon be celebrating its 100th aniversary. In 1831, Joseph Elkinton began the manufacture of soap and candles in Philadelphia. In 1857 his eldest son, Joseph S., joined him in partnership, a younger son Thomas, being admitted to the firm in 1859. From 1862, when the founder retired, until 1904, when the business was incorporated, the firm was known as Jos. S. & Thos. Elkinton.

Shortly after the Civil War, the properties of silicate of soda as a soapmaking material became known and the product was used in batches of soap produced probably in 1861 or 1862. The manufacture of silicate was then begun as a separate undertaking, in partnership with John Greacen, Jr., and Samuel Booth, in a building at 9th and Mifflin streets, Philadelphia. The Elkintons subsequently purchased the Greacen and Booth interests and moved the soap factory to the new site. The new business developed slowly, but progress was made. In 1876 Charles W. Goudy, a soapmaker in Marshalltown, Iowa, was engaged as salesman.

After the introduction of corrugated paper boxes, silicate was found to be a useful adhesive and came to be more extensively used. A new silicate plant was built at Anderson, Ind., in 1889, and the Philadelphia factory moved to Chester, Pa., in 1905, when the manufacture of soap was discontinued. Other plants were established later on at Buffalo, N. Y.; Kansas City, Kansas; Rahway, N. J.; and by the Philadelphia Quartz Company of California, at Berkeley, Calif.

George W. Goudy, at present sales director of the Philadelphia Quartz Company of Pennsylvania is a son of Charles W. Goudy who became connected with the firm in 1876. William T. Elkinton, president of the company, belongs to the third generation of the family, having succeeded his father, Joseph S. Elkinton, who died in 1905. Associated with him is his brother, Alfred C. Elkinton, who is president of the Philadelphia Quartz Company of California, as well as vice president of the Pennsylvania Company.

The Pickering Governor Company

THE Pickering Governor Company, Portland, Conn., are manufacturers not only of steam engine governors, but governors for all purposes such as steam turbines, oil and gas engines, electrical controls, gasoline tractors, etc. The company's business was established in 1862, thus antedating the organization of the American Paper and Pulp Association by fifteen years. In 1861 while running an engine, Thomas R. Pickering saw the necessity of closer regulation and at the same time sensed the difficulty of obtaining it with the gravity type of governor. Experiments conducted by him led to the conclusion that if a governor was to be active enough to function properly, springs were necessary to inspire this action. He accordingly made a governor of wooden springs and wooden balls and made other experiments which satisfied him that springs were a necessity for quick action and close regulation. Mr. Pickering invented the use of thin leaf steel springs which he ascertained acted as a more responsive controlling medium than the heavy fly balls formerly used. He took out patents on his invention and in a few years the principle of actuating governors with springs became quite general.

Plymouth Cordage Company

THE Plymouth Cordage Company, of North Plymouth, Mass., was established in 1824 and is thus in the 103rd year of its business existence. In 1824 a charter was granted by the State of Massachusetts to Bourne Spooner, William Lovering, Jr., John Dodd and John Russell "for the purpose of manufacturing cordage." The early products of the corporation were advertised as "Plymouth Patent Water Power Cordage" and we have seen the reproduction of an advertisement of this kind which appeared in the *Boston Patriot and Mercantile Advertiser* of May 11, 1826.

Bourne Spooner directed the affairs of the company for a period of forty-six years during which time the company had a history of almost steady growth and prosperity, and its rope stood first in the market. He was succeeded by his son Charles W. Spooner, and after an interval Gideon Francis Holmes succeeded to the administration of the company, taking charge in 1880, two years before his election as treasurer. Mr. Holmes was a great executive, manufacturer and merchant and it was during his administration—1880 to 1911—that the company made its great advance. When Mr. Holmes took office in 1882, John A. Dodd was president, and was succeeded by Caleb William Loring in 1890. Augustus Peabody Loring was elected president in 1897, which office he still holds.

At the 100th anniversary celebration in 1924, President Loring gave the output of rope and twine in 1899 as 47,500,000 pounds; twenty-five years later this had increased to 107,000,000 pounds.

In reading the centennial volume of the Plymouth Cordage Company, one gets the feeling that the business of the company is founded on more than mere principle of trading, evidences being abundant of the existence of a most friendly understanding between owners and workers as if all were associated in a common purpose, with splendid cooperation on all sides. The company participates in providing schools, libraries, old-age pensions and group insurance for its employees and any employee can buy stock in the Plymouth Cordage Company, as shares are issued in such a way as to put them within the reach of everyone.

The Pusey and Jones Corporation

THE Pusey and Jones Company, as the firm was known until early this year, had its beginning in a shop for the building of marine engines and general machine work which was conducted in 1848 by Joshua L. Pusey and John Jones. The building was situated on what was at that time called Water Street, between Poplar and Walnut streets, Wilmington, Del. The company attracted the attention of shipping interests through the superior quality of their work, and it was not long before they engaged in the building of ships and steamboats as well as marine engines. Upwards of 400 steamers of all descriptions have slid down the ways of the Pusey and Jones shipbuilding yard, and one accomplishment in which the company takes pardonable pride was the building of the steel-hulled racing yacht, "Volunteer," which defeated the English yacht, "Thistle," in the International Yacht Cup Race of 1887 and retained the cup for America.

Paper machine building was not undertaken by the company until 1867, and how it came about forms an interesting contribution to our historical studies of papermaking. At the Rockland Mills on the outskirts of Wilmington, Del., they had a fire which burned the machine room and the machines contained therein. On the day after the fire, William Luke, resident superintendent of the Rockland Mills at that time, came into the office of the Pusey and Jones Company and said to Thomas H. Savery, Sr., who was in charge: "I want you to build me two paper machines."

As already stated, the Pusey and Jones Company up to that time had devoted itself to the building of iron ships and heavy machinery in general, including steam engines and boilers, rolling mills, sugar mills and work of a kindred nature, and were naturally reluctant to accept an order for such a highly technical apparatus as a papermaking machine. But Mr. Luke insisted, reminding Mr. Savery that he had made a lot of repairs on machines in the Rockland Mills and had made them in the right way. "I know from the quality of the work that you do in other directions that you can build me the two

50 YEARS OF 1878-1927 PROGRESS

Serving the Paper Industry for 90 Years

1837 Our Company organized as Howe & Goddard

1848 Name changed to Goddard, Rice & Company

1862 Name changed to Rice, Barton & Company

1867 Incorporated as Rice, Barton & Fales Machine & Iron Company

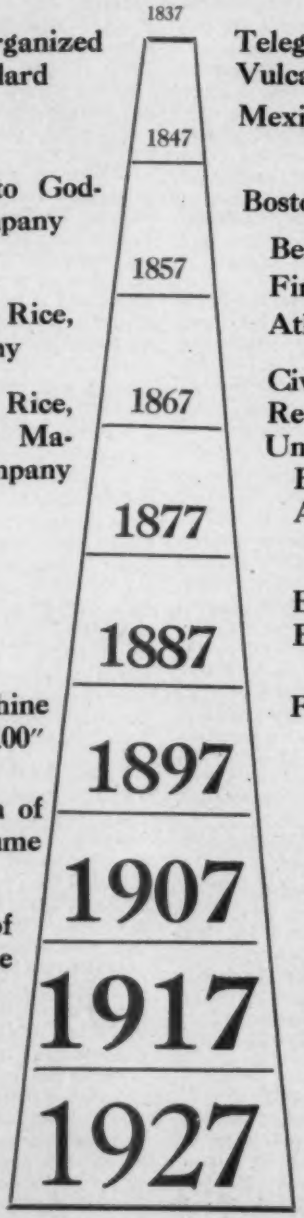
1890 Built first machine with wire over 100" wide

1891 Second generation of the Bartons assume control

1914 Third generation of the Bartons assume control

1922 Name changed for brevity to Rice, Barton & Fales, Inc.

1927 Ninety years in business.



Telegraph Patented 1837
Vulcanized Rubber 1839
Mexican War 1846

Boston-New York R. R. ...1849
Bessemer Steel 1855
Financial Panic 1857
Atlantic Cable Laid.....1858

Civil War 1861
Reconstruction 1867
Union Pacific R. R. 1869
Bell Telephone 1876
American Paper & Pulp Association Organized 1877
Electric Lights 1878
Brooklyn Bridge 1883

Financial Depression..1893

Spanish War 1898

Peary at North Pole.1909
Panama Canal 1914
World War 1914
We enter war.....1917

Reconstruction ...1919
American Paper & Pulp Association fifty years old...1927

Milestones—but stepping stones to greater achievements. Each decade past has brought us our proportionate share of "the knowing how" that bears us confidently towards the second century of our business career. We have weathered panics, wars and reconstruction; judging the future by the past, as did Patrick Henry, what have we to fear?

RICE, BARTON & FALES

Incorporated

WORCESTER, MASSACHUSETTS

50 YEARS OF 1878-1927 PROGRESS

best paper machines in the country—and you simply have got to do it."

The burned machines were taken down and enough parts assembled from the ruins to reconstruct one entire machine. Mr. Luke and Mr. Savery then worked together, and two new machines were built with fourdrinier parts 86 inches wide, which are still running today in the Rockland Mills, now owned by the Jessup & Moore Paper Company.

Thus it was that the Pusey & Jones Company started in as builders of paper machines sixty years ago. The building of these machines for Mr. Luke, who was afterwards head of the West Virginia Pulp and Paper Company, convinced the firm that a vast, fertile field of development lay ready for exploration. Twenty years of development followed. In 1887, Warren Curtis, of the Hudson River Pulp and Paper Company, made a demand on the company for a machine to carry a wire 110 inches wide and 50 ft. long to run at a speed of 250 ft. a minute. Up to that time the largest machines then running varied from 62 inches to 90 inches in width of fourdrinier parts, with speeds ranging up to 200 ft. a minute.

The next great step in the building of papermaking machinery by the Pusey and Jones Company was the construction of two machines for the Glens Falls mill, now a part of the International Paper Company, with a face width of 147 inches. These machines, in connection with another pair of almost the same size, because the pioneer machines in the making of high-speed newsprint paper. Width of wire increased year by year after that and the speed at which the machines are run increased correspondingly, so that today a width of 250 inches and a speed of 1,200 ft. a minute is not out of the ordinary.

The company is now at work on the construction of machines for the Manitoba Paper Company, Ltd., Pine Falls, Manitoba; the Brown Paper Mill Company, Monroe, La., and the Cascade Paper Company, of Tacoma, Wash.

The Pusey and Jones Company underwent a reorganization at the beginning of the year, its name being changed to The Pusey and Jones Corporation, but William Griscom Coxe, who has been the active head of the company for many years, was retained as president, and C. Steward Lee, who has been identified with the company for twenty years or more, has been named vice-president in charge of sales and negotiations, while Clarence B. Lynch will continue to have charge of the company's finances as treasurer, and J. H. Deinlein is secretary. The chairman of the board is Clement C. Smith who has been identified with many industrial corporations and public utility bodies for several years past. In the sales department R. S. Johnston functions as sales manager while H. G. McDowell continues as sales engineer.

J. E. Rhoads & Sons

OLDEST among the industries is the tanning business, and J. E. Rhoads & Sons, makers of Rhoads leather belting and lace leather, Philadelphia, is a firm that goes far back, having originated in 1702 when Joseph Rhoads, son of John Rhoads, of Derbyshire, England, established a tanyard in Marple Township, Delaware County (then Chester County), Pa. This Joseph Rhoads died in 1732, but the business was continued by his widow with the help of her youngest son, James, who, coming of age in 1743, inherited the tanyard.

The history of the business from 1743 down to 1923 is almost a genealogical record of the family. In 1778, James was succeeded by Joseph 2nd, who died in 1809, leaving the business to his sons George and Joseph, this Joseph being the grandfather of the older members of the present firm.

Down to 1868, the ancestral business was tanning, but in 1877 Jonathan E. Rhoads went into business with Thomas McComb, forming the firm of Rhoads & McComb, who engaged in the manufacture of leather belting and after this we hear no more of the tannery.

The firm of Rhoads & McComb was dissolved in 1887 and Jonathan E. Rhoads entered into a partnership with his son John B. when the firm became J. E. Rhoads & Sons, the name it bears today. George A. Rhoads, another son, entered the firm in 1888 and the record from then on is one of consistent development and progress. The factory and equipment was moved from Philadelphia to Wilmington and branch stores were opened in New York and Chicago. Office headquarters in Philadelphia were enlarged and later moved to more commodious buildings. In 1904, after a life full of years of useful service Jonathan E. Rhoads died, aged eighty-five. The present members of the firm are G. A. Rhoads, W. E. Rhoads and J. Edgar Rhoads. The long ancestral line reflects high credit on the family name which is honored also by the contributions which the family has made to the industrial life of the community.

The Russell Manufacturing Company

THE Russell Manufacturing Company, Middletown, Conn., is another of the early manufacturers of transmission and conveyor belting, having been organized and started in business in 1830. In 1834, the business was incorporated and the original brick mill, driven by a 14-ft. overshot waterwheel, is still standing. This was the era of whale oil as an illuminant and of wood stoves for heating. The original products of the mill were webbings for upholstery purposes, belting and saddlery goods. In the early days of the concern, elastic webbings were manufactured in rather a primitive fashion for use in suspenders. After considerable experimenting a power loom was perfected for weaving elastic webbing, the first loom of its kind in the United States.

The manufacture of solid woven cotton belting was then undertaken and brought to perfection, patents being taken out on the process. Other lines were added from time to time.

The original type of belting manufactured by the Russell Manufacturing Company was used principally for conveying purposes in flour mills and kindred industries. Later, the company made an intensive study of fabric belting as a substitute for leather and rubber, not only for conveying purposes but for transmission of power, and a durable quality of belting is now made under the trade name Rusco which is being largely used instead of cotton belting. Rusco belting after being woven is impregnated by a special process. The plant has been greatly expanded since the World War and as the plant grew in size water power was abandoned as inadequate and the entire plant is now electrically driven.

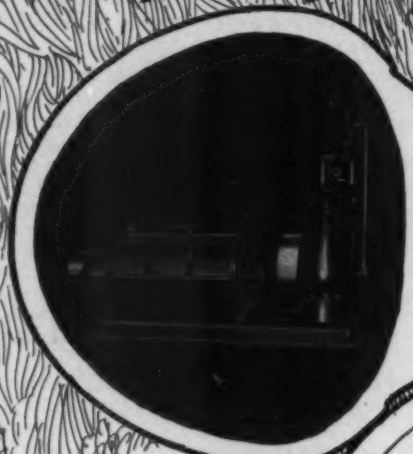
Rice, Barton & Fales

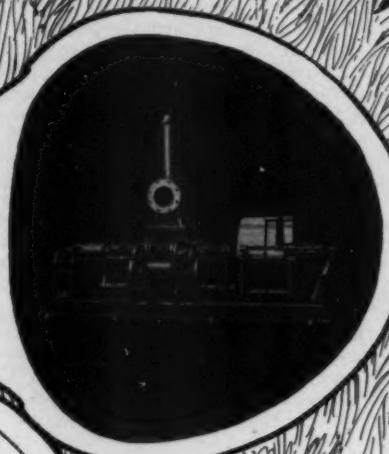
RICE, BARTON & FALES, INC., of Worcester, Mass., will this year celebrate the ninetieth anniversary of its foundation. In 1837, at Worcester, Mass., then a growing town of 7,000 people, there was established a concern by the name of Howe & Goddard, whose purpose it was to manufacture paper and pulp mill, and textile machinery. In 1848, with the admittance of George M. Rice to the partnership, the firm name changed to Goddard, Rice & Company.

In the nearby town of Millbury, on July 18, 1925, there was born a boy who was named George Sumner Barton and who, at the age of twenty, came to Worcester to seek his fortune. He was apprenticed to Howe & Goddard as a machinist, later became foreman, and then he acquired an interest in the business and the firm name was again changed, in 1862, to Rice, Barton & Company, the two original partners having retired. In 1867, Joseph E. Fales was admitted, and in that year the business was incorporated under the laws of Massachusetts as the Rice, Barton & Fales Machine & Iron Company, which name remained unchanged during a period of over fifty years, when, in 1922, it was for brevity changed to Rice, Barton & Fales, Incorporated.

The history of this firm is one of particular interest as it has continued in the Barton family through the years since George Sumner Barton first became connected with it. When he died in 1891, his son Charles Sumner Barton succeeded to his interests. In 1892 a new plant was built in the then undeveloped south section of the city, and this has since been enlarged and equipped with facilities to take care of the constantly increasing size of machinery required by the trade. Charles Sumner Barton had a remarkable talent for making and retaining friends and no man in the city of Worcester was more widely known or held in higher esteem. At his death in 1914, the third generation of Bartons assumed control when George Sumner, the second of that name, became president and treasurer of the company, positions which he still occupies. Mr. Barton has associated with him J. Warren-

Keeping Pace With Industry





It's a far cry from the crude Roots Water Turbine of 1859 to the high-efficiency blower of 1926. There is a wide span of engineering development between the Roots Fluid Meter of 1863 and the highly developed Roots Gas Meter of today. Yet the old and the new are alike in one thing—their principle of operation—for the Roots principle is as fundamentally correct today as it was 67 years ago.

—and Roots equipment is a factor in all industry today, because the mechanical refinements of the fundamentally correct Roots principle, have consistently anticipated the needs of industry; until, today, Roots equipment demonstrates its rugged dependability in almost every industry. Roots engineers are alert to the changes in your industry—they are always subject to your call.

The P. H. & F. M. ROOTS CO.

CHICAGO
Peoples Gas Building

CONNERSVILLE, INDIANA

NEW YORK
120 Liberty Street

50 YEARS OF PROGRESS 1878-1927

Vedder as vice president and general manager and Lester M. Start as secretary.

Many of the employees of Rice, Barton & Fales, have seen long service; there are between twenty-five and thirty whose service is measured by twenty-five years or more, ten having served upwards of forty years and there being two whose record extends over half a century. One of these two men is proud of the distinction of having served under three generations of the Barton family.

It is interesting to note the development in width of papermaking machines since 1850 when Rice, Barton & Fales was turning out cylinder machines ranging from forty inches to sixty-two inches and fourdriniers of sixty-two to seventy-two inches.

In the year of the founding of the American Paper and Pulp Association, fourdrinier machines were built as wide as eighty-four inches, and it was not until 1890 that Rice, Barton & Fales, then over half a century in business, built the first machine exceeding 100 inches in width, while in 1926 machines were built or were on order for widths of 234 inches, 210 inches, 208 inches, 170 inches, 160 inches, 156 inches, 154 inches and 86 inches respectively. It may be noted that two fourdriniers 210 inches wide are under construction. None of the firms in which the earlier narrow machines were used can he found listed in a paper mill directory of today, which circumstance furnishes an indication of the vicissitudes of papermaking, for the line of descent of old firms is rarely continuous.

The P. H. & F. M. Roots Company

THIS year the P. H. & F. M. Roots Company, Connersville, Indiana, marks the 68th anniversary of the manufacture of Roots pumps, during a considerable period of which time, Roots units have been known and used in the paper industry.

Prior to 1859, the Roots Brothers, P. H. and F. M., owned and operated a woolen mill at Connorsville, Indiana. The mill power plant consisted of an old style, undershot water wheel, and in attempting to improve upon their motive power, the Roots Brothers conceived the idea of using a two-impeller water motor as a substitute for the under-shot water wheel. A two-impeller machine was built, but did not prove to be a success as a water motor, for the wooden impeller swelled after but a few hours' service and stuck in the case.

After removing the water motor to the shop and planing down the impellers with a jack plane, the machine was being run by a belt when it was discovered that it delivered a considerable volume of air at a relatively high pressure, and a foundryman who was standing by exclaimed, "Why that machine will melt iron in my cupola." This is the origin of the two-impeller Rotary type of pump, which has been known since 1859 as the Roots type.

Since that time the two-impeller rotary principle has been applied to blowers, exhausters, meters and liquid and vacuum pumps with unusual success by the P. H. & F. M. Roots Company.

The development of this principle has included the designing of pumps that are particularly adapted to paper mill service. Roots vacuum pumps are widely used on rolls and paper machines, and their liquid pumps are particularly adapted to paper mill service because of the large volume which may be pumped with a comparatively small power consumption.

Roots blowers are also used in a number of paper mills for the conveying of rags, chips and other materials that lend themselves to pneumatic conveying.

Joseph T. Ryerson & Son, Inc.

DURING 1927, the Joseph T. Ryerson Company, Chicago, will celebrate its eighty-fifth anniversay. It was in November, 1842, that Joseph T. Ryerson opened his first small store in the frontier town of Chicago and inaugurated the "steel-service" idea.

During these eighty-five years, the business has grown, keeping pace with the industrial developments of the country until it is today a national organization with plants in nine cities, and offices in many more. The present steel-service plants are located at Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston and New York.

Today Ryerson Steel-Service stands for immediate delivery of practically everything in iron and steel; bars, plates, shapes, etc., all cut to size; sheets of all kinds, reinforcing steel, special irons and steels and hundreds of other special steel products are all delivered promptly from warehouse stock.

When steel is needed by the paper industry, it is nearly always wanted in a hurry—when something breaks and quick repairs must be made—for maintenance, new construction—and Joseph T. Ryerson & Son has always made a point of meeting these requirements with immediate shipment.

American Schaeffer & Budenberg Corporation

AMERICAN SCHAEFFER & BUDENBERG CORPORATION, with general offices in Brooklyn, N. Y., and valve factory and foundry in Worcester, Mass., well known as manufacturers of instruments of temperature control, and recording thermometers for pressures, temperatures and speeds, has a history dating back to the organization of the American Steam Gauge Company in Boston in 1853, when George H. Ashcroft secured the rights to manufacture the Bourdon gauge, which was exhibited at the first International Industrial Exposition in London in 1851. George H. Fox incorporated the American Steam Gauge Company in 1854 after acquiring Mr. Ashcroft's rights in the manufacture and sale of the Bourdon steam gauge in the United States. After various changes in location, the plant was moved in 1899 to Jamaica Plain, a suburb of Boston, and a few years later a change was made to Camden street, Boston, where buildings having a floor space of 80,000 sq. ft. were purchased. Meanwhile, Schaeffer & Budenberg making a gauge on a different principle in Germany, had prospered and grown. Thirty years after its foundation in 1848, an importing branch was established in New York and eight years later, a factory was started in Brooklyn.

In 1919, American interests took over Schaeffer & Budenberg, combining it with the American Steam Gauge & Valve Mfg. Co. The following year, the gauge and instrument work was transferred to Brooklyn from Boston. A few years later, Hohmann-Nelson Company was added to the organization. This latter was a young, western company which had already advanced far in the development of temperature and pressure controllers. The valve plant and foundry continued in Boston until 1925, when it was moved to a more modern factory in Worcester, Mass.

Shuler & Benninghofen

SHULER & BENNINGHOFEN, manufacturers of papermakers' felts and jackets, Hamilton, Ohio, or the Miami Woolen Mills, as the plant is equally well known, was founded in 1858 by Asa Shuler and J. W. Benninghofen. Mr. Benninghofen was succeeded on his death in 1881 by his sons C. Benninghofen and P. Benninghofen. Asa Shuler died in 1895 and was succeeded in the partnership by his two sons, C. A. and William B. Shuler.

Shuler & Benninghofen are pioneers in the manufacture of papermakers' felts, no other concern having been engaged in felt manufacturing at the time this firm started to make them. In the early days, it was a simple matter to treat the wool stock with two sets of small cards, but today eleven sets of large cards are kept occupied all the time in preparing stock for mules, as the technical phrase goes.

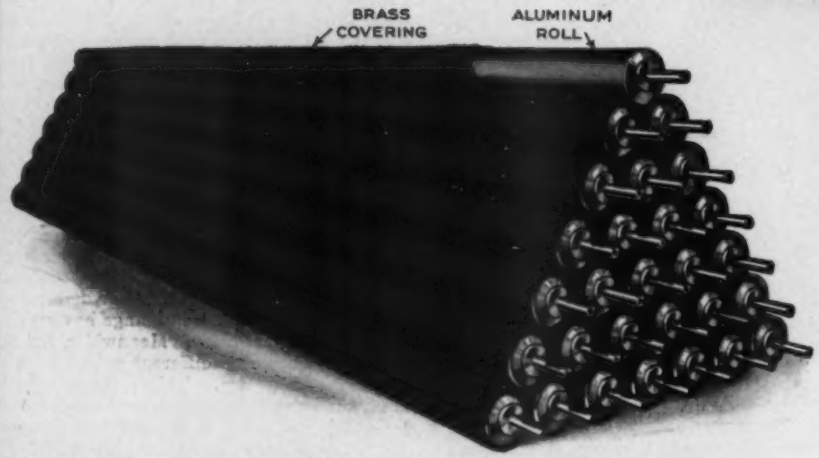
Simonds Saw and Steel Co.

APPROACHING its centenary of business life, the Simonds Saw and Steel Company, Fitchburg, Mass., remains under the direction of the descendants of Abel Simonds who started the business at West Fitchburg in 1832. The name indeed signifies one of the oldest and most substantial firms in continuous production in one line.

The Simonds Saw and Steel Company are the foremost producers of all kinds of saws and machine knives in the world. The name of the company has been changed from time to time, and until a few years ago was known as the Simonds Manufacturing Company, the chief products of the plant being saws, knives, files and steel and the business has always been controlled by some representative of the Simonds family. In addition to the plant at Fitchburg, the Simonds Saw and Steel Company operate a saw and knife works and crucible steel mill in Chicago, as well as a similar plant in Montreal, which is seen by every visitor to the city as he approaches by rail from the south.

Your Wires Will Last Longer by Using

ALU-BRASS TABLE ROLLS



Rolls in illustration 5" diameter x 158" face,—weigh 85 pounds each. All brass rolls of the same size would weigh 130 pounds each. On a set of 40 rolls there would be a saving of 1800 pounds weight on machine, meaning less for wire to turn.

Rolls manufactured under U. S. Patents Nos. 1,521,742 and 1,543,281

At least 25% lighter than all brass rolls. Cuts down power consumption, also wear and tear on shake end of machine. Stiffer, easier to handle and keep in shape better than old style brass rolls. When outer brass covering becomes worn, it can be replaced at about 50% of the cost of a new roll.

This feature alone is worth considering.

Let us quote you prices and furnish copies of letters from satisfied users.

Union Machine Co.
Fitchburg, Massachusetts
(Roll Makers)

Immediate Steel
for the Paper Industry

For more than 84 years Ryerson has been meeting the steel requirements of the paper industry with immediate delivery of all the steel products needed.

The eight huge plants heavily stocked with everything in iron and steel, unequaled facilities, and experienced organization assure dependable, accurate delivery in the shortest possible time.

When you need steel call on Ryerson—no waiting, no delay.

Bars	Plates	Reinforcing Steel	Boiler Tubes
Shapes	Sheets	Firmtread Plates	and Fittings
Structurals	Rivets	Forging Bars	Alloy Steel
Rails	Bolts	Billets	Ascoloy
Shafting	Nails	Turnbuckles	Tool Steel
Strip Steel	Wire	Babbitt Metal	Small Tools
Flat Wire	Chain	Welding Rods	Machinery, Etc.

Write for the Journal and Stock List—the "Key" to Immediate Steel

JOSEPH T. RYERSON & SON INC.
CHICAGO, ST. LOUIS, DETROIT, NEW YORK, BOSTON, MILWAUKEE, CINCINNATI, CLEVELAND BUFFALO.

RYERSON STEEL-SERVICE

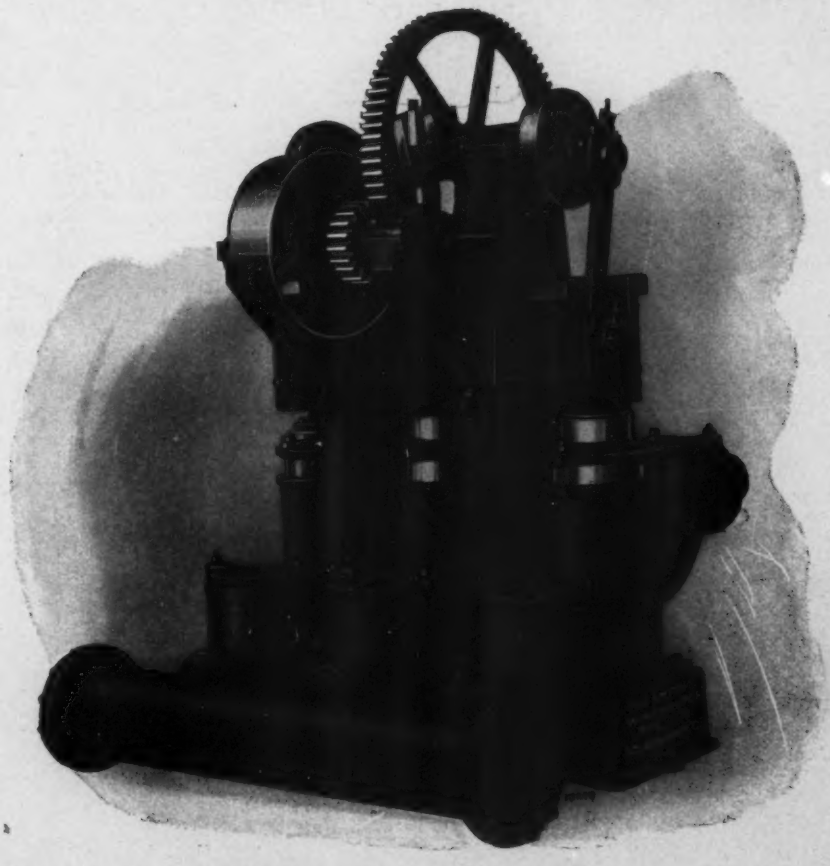
50 YEARS OF PROGRESS 1878-1927

ESTABLISHED 1828

THE SMITH & WINCHESTER MFG. CO.

SOUTH WINDHAM, CONN.

Paper Mill Machinery
Paper Bag Making Machinery
The Undercut Trimmer



JORDAN ENGINES—**PUMPS**—The "Rainstorm" Shower Pipe

The T. B. Wood's Sons Company

CHAMBERSBURG, PA.

FOR nearly three quarters of a century manufacturers of Power Transmission Machinery extends greetings to the paper and Pulp association on the 50th Anniversary of its organization.

It is with real pride that we point to our 70 years of service and the important role our products have played in the development and success of this great industry.

To our many friends and customers whose confidence we have enjoyed and still enjoy, we take this opportunity to express our sincere appreciation.

T. B. WOOD'S SONS COMPANY

CHAMBERSBURG, PA.

Manufacturing Engineers and Makers of modern and approved appliances for the transmission of power - - -

1857 1877 1927

The Smith & Winchester Manufacturing Company

THE Smith & Winchester Manufacturing Company, South Windham, Conn., is another of the firms doing business with the paper and pulp industry that is approaching its centenary. Next year South Windham, which lies about three miles south of Willimantic, will celebrate the 100th anniversary of the founding of The Smith & Winchester Manufacturing Company, which is credited with having built the first fourdrinier machine ever constructed in the United States. It is a matter of record, too, that the firm in 1854 built and shipped the first fourdrinier paper machine that was placed west of the Mississippi river, this having been erected in the plant of the Pioneer Paper Mill, of Taylorville, Calif., for the manufacture of newsprint paper from rag stock. In 1884, a second machine was built for this mill, and the business of manufacturing paper machinery was subsequently developed and extended to embrace cylinder machines and finishing machinery, including cutters and winders, as well as beaters, jordan engines and stuff pumps.

In 1871, forty-six years ago, the firm completed for the Smith Paper Company, of Lee, Mass., a Jordan & Eustice refining engine at a cost of $845, and a year later built and installed for Thomas Phillips Company, Akron, Ohio, a 62 in. cylinder machine for which $5,600 was paid.

In 1899, The Smith & Winchester Manufacturing Company purchased the business of the Frank A. Jones Company, of New York, and moved it to South Windham. This was a complete line of paper bag machinery and paper cutters of the "undercut" type.

The Smith & Winchester Manufacturing Company developed the Bates valve bag machine for the manufacture of cement bags, but the business has expanded in many directions, friction clutches and pulleys being now featured with other classes of machinery used in pulp and paper mills.

When the plant of the Smith & Winchester Manufacturing Company was organized in 1828, it gave work to about ten men, whereas it now employs about 160 men. The officers of the company are Walter Abbey, Jr., president and treasurer, who also acts as general manager; Carl E. Oman, who has been connected with the company for twenty-eight years, and is an authority on paper bags and paper cutting machinery, is vice president, while Cassius A. Barstow is assistant treasurer.

T. B. Wood's Sons Company

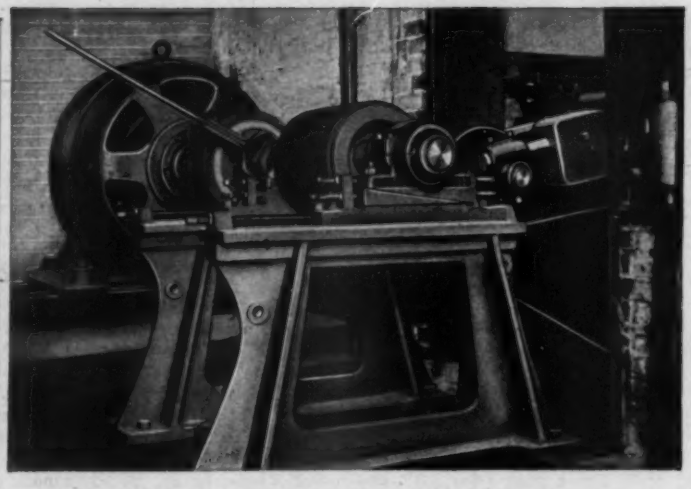
THE history of T. B. Wood's Sons Company, of Chambersburg, Pa., is a record of an associated interest of almost three-quarters of a century in the development of the paper industry of America. The company was upwards of twenty years old when the American Paper and Pulp Association was organized in 1878. T. B. Wood and Peter B. Hausum who had experience in equipping paper and grist mills in southern and central Pennsylvania formed a partnership in 1857 under the name Wood & Hausum to manufacture steam engines, water wheels, mill gearing, shafting, pulleys, etc. Mr. Hausum was killed in the Civil War and in 1868 a new partnership was formed under the name of T. B. Wood & Co., which included T. B. Wood, his son George A., and Levi D. C. Houser. This firm was continued until 1884 when Mr. Houser retired and his place was taken by Theodore M. Wood, a younger son of T. B. Wood. At this time, the name was changed to T. B. Wood & Sons and continued under this title until January 1, 1889, when T. B. Wood retired, and his sons, George A. Wood and Theodore M. Wood, conducted the business under the name T. B. Wood's Sons, which firm continued the business until January 1, 1906, with no change in name or personnel, except that Charles O. Wood, son of George A. Wood was taken into the firm January 1, 1899.

In 1906, the business was incorporated under the present title of T. B. Wood's Sons Company. George A. Wood, president, died in 1925 and his brother Theodore M. was elected president to succeed him. During the seventy years' existence of the company, only ten persons have been associated with its management and of these, six are now in the company.

It is interesting to review the records of the '50's, '60's, and early '70's and follow the development of the line from the simple plain rigid grease box bearings, immense octagon wooden shafts, hollow cast iron shafts, cast iron pulley spiders and gears with large octagon eyes to the present day line of scientifically designed adjustable and self-oiling appliances all highly finished and perfectly balanced.

The T. B. Wood's Sons Company line today embraces shaft-

Main office and works of T. B. Wood's Sons Co., Chambersburg, Pa.



Driving unit recently installed for three beaters in the plant of U. S. Paper Co. Shaft is supported by Wood-Fafnir Ball Bearing Pillow Blocks and is connected directly to motor by friction clutch cut off coupling.

T. B. WOOD'S
POWER TRANSMISSION APPLIANCES

were first used in the plant of the United States Paper Company in 1857

OUR connection with the Paper Industry dates from 1857—seventy years ago—when we received our first order from the United States Paper Company and whom we have served continuously since that time.

Wood's Power Transmission Appliances are used by paper mills the world-over—many having been on our books for fifty and sixty consecutive years.

The reason for Wood's popularity with the paper industry is not only our basic knowledge of conditions, and requirements, but also our willingness to co-operate and work with the many excellent plant engineers in the industry.

Do you have a copy of our new catalog?

T. B. WOOD'S SONS COMPANY

CHAMBERSBURG, PA.

1857 1877 1927

50 YEARS OF PROGRESS 1878-1927

ing, couplings, set collars, pulleys, hangers, pillow blocks, friction clutches, belt tighteners, rope sheaves and every appliance needed for the mechanical transmission of power.

Chas. A. Schieren Company

THE Chas. A. Schieren Company, tanners and belt manufacturers, New York, was established in 1868 in a little store at 90 Gold Street. The business soon outgrew this small establishment and was moved into a building at the corner of Ferry Street, opposite the present location of the Schieren Building. In 1905, the company moved into its present fine building that forms a part of New York's skyline as seen from the East river.

In the fifty-nine years that the company has been engaged in the tanning and manufacture of leather belting, many interesting things have come to light. For instance, there is the wire screwing machine which was first used by the Chas. A. Schieren Company for screwing belt plies together with small wire screws. It is worth noting that a great many belts are still made with wire screwed edges where such belts are subject to constant shifting. The wire screw sewing makes the belt's edges much more resistant to rubbing.

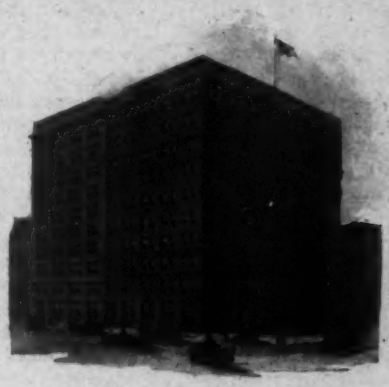
Another innovation in those days was the patent perforated electric leather belting. The belt was perforated at regular intervals for its entire length. At the time, many engineers thought that if they could secure a perforated belt, it would do away entirely with air pockets between the belt and the pulley with a consequent increase in power efficiency. In line with the trend of engineering thought at the time, the Chas. A. Schieren Company was the first to produce such a belt. Perforated belts are still much in demand among mining companies in some countries where thievery of belting is sometimes a large item of loss. The perforations, these companies maintain, eliminates theft, for they make their belts readily identifiable and unsuited for use as shoe soles.

First store of Chas. A. Schieren Co., 90 Gold St., New York City

Another improvement originated by this company is the American patent hinged joint for leather belting. This construction allows a link belt to conform to pulley crowns and makes its operation more efficient. These belts are widely used today in almost every paper mill in the country.

The Chas. A. Schieren Company was among the pioneers in developing and perfecting a waterproof leather belt. Under the trade name of "Duxbak," their waterproof belting is known wherever leather belts are used. The leather for Duxbak belts is put through a special scouring process that removes every trace of the tanning grit from between the fibers, giving it strength and pliability, which, with its waterproof qualities, make it especially suited for paper mill work.

Chas. A. Schieren Company has always controlled its own tanneries. Originally, the Schieren Tannery was located in Brooklyn, then moved to Pennsylvania and thence to Bristol, Tennessee, which is the center of this country's largest supply of chestnut oak bark.



Schieren's present New York building

The business has grown steadily from the day of its inception until today more than 100,000 hides are made up into belting in the course of each year. Good belting and fair dealing have raised the Chas. A. Schieren Company from a tiny store on Gold Street to a place in New York's famous skyline.

Southwark Foundry & Machine Company

THE Southwark Foundry & Machine Company, Philadelphia, was founded in 1836 by Samuel Merrick. Mr. Merrick, who lived in Philadelphia, was one of the founders of the Franklin Institute.

Although 1836 is the date of its incorporation, the Southwark Foundry & Machine Company was actually in operation some time earlier. The firm has the credit of having developed much machinery which has since become standard equipment for mechanical plants all over the world. These include steam engines, both reciprocating and turbine, blowing engines and many other special machines. Of late years the works have been given over largely to the development of hydraulic presses built and designed to suit every requirement.

William H. Harman is president of the company, and F. G. Schranz is salesmanager. The company maintains district offices in Chicago, Akron, Ohio, and in Canada.

S. Morgan Smith Company

S. MORGAN SMITH founded the business of S. Morgan Smith Company, of York, Pa., in 1877. The order books of the firm show that on February 2, 1877, there was entered an order for a 30-in. waterwheel which was to be known as the "Success" turbine. In the early days, turbines were built on contract under Mr. Smith's supervision in some of the local machine shops and foundries in York. Mr. Smith did not have a factory of his own until 1890. In that year, he began the manufacture of Success turbines in his own plant, a building which measured approximately 50 ft. by 150 ft., and the entire working force comprised less than a score of mechanics. The tool equipment consisted of a 96 in. and a 54 in. boring mill, an 8 ft. shafting lathe, a Gleason gear cutter and two

Chas. A. Schieren Co., tanneries at Bristol, Tenn.

50 YEARS OF PROGRESS 1878-1927

small drill presses. The business prospered and in 1896 the name of the founder was perpetuated by incorporating the S. Morgan Smith Company. In 1910, a new and modern factory was built on the site of the original plant and from time to time extensions and additions have been made to keep abreast with the requirements of the industry.

S. Morgan Smith possessed the vision to grasp the possibilities of an industry which was so eminently practical and useful, and having the courage of his convictions, his administration was one of great energy and strict adherence to sound, upright business principles, which led to the development of a successful business, the fruition of which he had the satisfaction of seeing before he passed away in 1903.

S. Morgan Smith was instrumental in promoting the installation of the first electric transmission system in this country. He built the four horizontal shaft hydraulic turbines installed at Folsom, Calif., from which the electric current was transmitted to the city of Sacramento, a distance of 23 miles, which in those days was a record for long distance transmission.

The S. Morgan Smith Company enjoys an enviable reputation as pioneers and leaders in the field of industry, with a plant recognized as the world's largest works devoted exclusively to the manufacture of hydraulic turbines and accessories.

Stowe & Woodward Company

STOWE & WOODWARD COMPANY, makers of rubber covered rolls, Newton Upper Falls, Mass., is the successor of the Boston Belting Company, Boston, who were the original manufacturers of paper mill rolls at a period antecedent to 1877. James Bennett Forsyth was the factory superintendent, and he perfected the process. R. B. Adams, technical superintendent of Stowe & Woodward Company, went to work for him in 1895, and was assistant to him and his brother, Thomas A. Forsyth.

In the earlier days they were not able to make the rubber covering adhere to the iron bodies, and many different ways were tried to accomplish this result, such, for example, as planing dove-tail grooves lengthwise of the body, that is, filling the surface of the metal body with small, lengthwise keyways, and also by putting wire, fabric, cord, etc., on the outside of the body so that it would become embedded in the rubber. None of the foregoing methods were successful, because if much pressure was put in the roll the covering would come loose.

The problem was finally solved by Mr. Forsyth when he found that hard rubber coverings would shrink considerably upon being vulcanized, and he soon perfected a method which proved successful. He rough turned, or scored, the surface of the metal body and applied a layer of rubber compound to the iron of such composition that would vulcanize as hard as bone. On top of the hard covering was added more rubber still softer, so as to give the desired density. These different layers of gums were put on in the un-vulcanizing state, and then the roll was wrapped with cotton fabric to serve as a mould and the whole covering vulcanized. The different kinds of gum vulcanized firmly together while the interior layer of hard rubber became firmly united to the iron, *first*, because it was put in very intimate contact with the roughened surface of the iron, and also because being in the form of a tubular shell, and because it shrunk when vulcanized, it, of necessity, gripped the metal body so tightly that the rubber covered press roll could be used under very heavy pressure and the covering would not come loose from the shell.

Mr. Forsyth was a skillful and practical rubber compounder himself. He experimented and perfected compounds of rubber and mineral matters which would always give the same hardness under the same degree of vulcanization, and after some years of experience, it was found possible to make rubber coverings of any desired hardness.

For many years, there was no way of accurately measuring the hardness of rubber, though persons skilled in the making and using of rubber rolls, by pushing the point of a key into them, could judge approximately how hard the covering was. The first scientific instrument made to measure the hardness of rubber was the Densimeter, which was used in the Boston Belting Company's factory, but it was confined exclusively to use in the factory and in those days all such details were kept secret. The need for such an instrument to be used in the paper mills was so pressing that such an instrument was designed in the plant of the Pusey & Jones Company, which was called a Plastometer; it came into universal use, and the development of the plastometer may really be considered as a part of the development of the manufacture of rubber covered rolls.

Sullivan Machinery Company

SITUATED in a district which has manufactured paper for several generations, the Sullivan Machinery Company, Claremont, N. H., has made some small contributions to the manufacture of paper during its long life. Begun as a partnership in 1851, it was incorporated by J. P. Upham, Roger W. Love and Albert Ball in 1869. Although its principal industry was the manufacture of quarrying machinery for the marble quarries at West Rutland, Vt., its inventors found time to design machines for other industries.

Somewhere in the seventies, Albert Ball, who was mechanical engineer of the company for nearly fifty years and who died last month at Claremont, N. H., at the ripe age of 92 years, invented a woodpulp grinding machine for E. R. Cartmell, of Bellows Falls, Vt. After manufacturing a number of these machines, the interest was sold to Wm. A. Russell & Co., of Bellows Falls, which continued to make them. Mr. Ball also designed and manufactured a machine for putting wire hangers in packages of toilet paper, making a loop for hanging the package at the same time. Coincidentally he designed paper roving cans which were used by textile mills all over the country for waste at the looms. A later invention was the hand power baling press, widely used for bailing and packaging waste paper and paper and textile mill refuse.

In later years, beginning about 1900, the Sullivan Machinery Company has become known in the paper industry as large manufacturers of air compressors and of air lift pumping equipment for deep wells. Pneumatic tools of various kinds, such as hammer drills, concrete breakers, etc., are also furnished and portable compressed air and electric hoists for construction work, for use in pulling cars in freight yards, factories, etc. The main plant of the company is still at Claremont, N. H., and in addition there is a western plant at Michigan City, Ind., at which the larger sizes of air compressors and air lift pumping equipment are manufactured.

W. O. & M. W. Talcott

W. O. & M. W. TALCOTT, INC., manufacturers of belt fasteners, Providence, R. I., is a pioneer firm in this field, claiming the distinction of being the only concern in the country making any kind of a plate belt fastener in 1877. While many other fasteners have come upon the market since that time, the Talcott belt hooks are reputed to be the standard of strength and reliability in most factories.

W. O. & M. W. Talcott, Inc., have kept abreast with the times and at the present time make belt fasteners for every kind of belting, including rubber, canvas, leather, etc., that are suitable for transmission and conveying purposes.

The Textile Finishing Machinery Company

THE Textile-Finishing Machinery Company, of Providence, R. I., is a corporation that comprises the business plants of the Granger Foundry and Machine Company, the Phenix Iron Foundry, the Thomas Phillips Company and the Rudsen Machine Company. The first two companies were early makers of calenders and calender rolls and were successors to the Cove Foundry and Machine Company who were also roll manufacturers; the last named firm was taken over by the Granger company in the early '60's. The founders of The Textile-Finishing Machinery Company consisted of the heads of the four concerns which went into the combine, H. A. Tillinghast, George C. Phillips and E. A. Rusden. The first president of the corporation was H. Martin Brown, and the present president is E. A. Rusden.

The Granger Foundry and Machine Company's records show calenders and rolls were made by them for many years previous to 1876, while the Phenix Iron Foundry manufactured calenders and rolls as far back as 1844.

50 YEARS OF PROGRESS 1878-1927

Taylor, Stiles & Company

TAYLOR, Stiles & Company, of Riegelsville, N. J., widely known in the pulp and paper industry as manufacturers of rag cutters, pulp shredders, roll bars, engine bed plates, machine knives and similar machinery, was founded by Frederick S. Taylor in 1869 where the firm is now situated at Riegelsville, on the banks of the Musconetcong River.

Frederick S. Taylor was a Vermont Yankee. He came to Riegelsville from Smithville, N. J., where he had received his training in the manufacture of machine knives. He was a fine type of shrewd, honest, industrious Yankee who built up a comfortable fortune for his day by hard, concientious effort.

Mr. Stiles, also from New England, became connected with the business shortly after it was founded, and some years later, C. W. Griffin, father of Harry W. Griffin the present secretary

Main building of present plant of Taylor, Stiles & Co., Riegelsville, N. J.

of the company, joined and became president of the company after it was incorporated in 1907, a position which he held until the time of his death in 1925.

The machines that were in use in paper mills for cutting rags at the time Messrs. Taylor and Stiles began making them were practically hay cutters made very largely of wood and wore out very fast. The first cutters they built were on that same principle but were all steel and iron. Their first machine carried four 12 inch knives and had a capacity of approximately 1000 pounds per hour. Finding that there was a great need for a strong, well built cutter on which repairs would be small the company steadily developed and improved this line of machinery.

The development of stock cutting machinery was due to a great extent to the inventive genius of C. W. Griffin, who worked and patented a number of improvements. Taylor, Stiles & Company's No. 20 rag cutter, which is sold extensively to the trade, is an example of this design. It is perhaps the most efficient machine for the cutting up of large quantities of rags and other stock that is used for this purpose.

Union Machine Company

THE Union Machine Company, of Fitchburg, Mass., was first incorporated under Massachusetts laws in the year of 1867, commencing business by manufacturing machine tools and doing general repairing and wood working. The company became well known early in its history through the manufacture of the "Jucket Steam Fire Engine" which was introduced in 1870 and carried on for about two years. In 1872 the manufacture of paper and pulp mill machinery was started and has continued up to the present time.

In addition to cylinder and fourdrinier machines, the Union Machine Company manufactures bleach hoists, kollergangs, jordan engines, pumps, stuff chests, beaters, washers and dusters, and during the past ten years they have specialized on all kinds of rolls not only for paper mills but for other lines of industry.

One of the chief improvements in rolls is a table roll manufactured under a license agreement, consisting of an aluminum roll covered with a thin brass covering. This roll is 25 per cent lighter than an all-brass roll, is stiffer and easier to handle. An added advantage is that when the outer covering becomes worn, it can be replaced at about 50 per cent of the cost of a new roll.

In all the years of progress and success the personnel of this organization has seen few changes. The officers are M. A. Crocker, president; Emmons Crocker, vice president, and Ernest N. Daulton, treasurer and general manager. Mr. Emmons Crocker has been connected with the company for more than forty-five years and Mr. Daulton about twenty-five years.

Vacuum Oil Company

THE Vacuum Oil Company, with general offices in New York and works and refineries at Rochester and Olean, N. Y., Bayonne and Paulsboro, N. J., is the oldest oil company doing business today, having been founded October 4, 1866. It was not until forty years later, in 1870, that a corporation was formed under the name Standard Oil Company of Ohio which was the real beginning of the Standard Oil Company. Hiram B. Everest was president from 1866 to 1900; Charles M. Everest, chief executive and president 1880 to 1917; Edward Prizer, president 1917 to 1924 and chairman of the board of directors; while George P. Whaley has been president from 1924.

The company specializes in the manufacture of lubricating oils for special purposes in the industries, keeping constantly in mind that efficient lubrication means the right oil applied to the right place, in the right way, and it has served the principal industrial plants of the country with lubricating oils and lubrication counsel in this way for more than half a century.

The Gargoyle trademark of the Vacuum Oil Company was adopted in 1906 and is famous the world over. When the company was incorporated in 1866, its personnel comprised some twenty-five people in the early plant at Rochester, N. Y. Today the organization includes more than 15,000 people in this company and abroad, a few of whom have served for fifty years and a large number twenty-five years or more.

John Waldron Corporation

THE John Waldron Corporation, of New Brunswick, N. J., is this year celebrating its 100th anniversary. The original business founded by William Waldron in 1827 was devoted to the manufacture of shoe lasts and wood turning. A few years later when the steamboat began to take its place in river navigation, Mr. Waldron's knowledge of machinery was drafted for work on marine engines. Following this, when rubber first came into use, the Waldron shop began building the machinery for fabricating rubber. At that time, it must be understood, paper other than writing paper, was not thought of. There were no such things as machine-made coated paper, gummed paper, wall paper and other such paper products that we are so familiar with today. Only sheets produced by hand were available in some of these lines.

Even at that time, the Waldron Company was keenly alive to the tremendous possibilities and opportunities that would be opened up with the advent of paper converting, and had a plant for making machines for coating paper before Louis DeJonge & Company had started producing machine coated paper. And today, Louis DeJonge is known as probably the oldest coated paper company in America. So it is not too much to state that the Waldron Company from its beginning took part in the very beginning of all these industries.

One of the treasured possessions of Louis DeJonge & Company today is a copy of their order, made out seventy-five years ago, written in long hand to William Waldron in New Brunswick, N. J., for a coating machine. With the completion of this machine really began many industries devoted to the many forms of paper converting, that have grown to such vast proportions at the present time.

With the Waldron Company at that time a leader in building and designing machinery for coating paper, new industries, one after another, came to them with ideas for new products and new effects and the Waldrons not only studied their own problems in designing and building the necessary machinery, but the effects to be secured also. These machine require-

50 YEARS OF 1878-1927 PROGRESS

ments were met, sometimes by themselves and at other times by working in co-operation with the inventors.

The first piece of paper base floor covering ever made was made on a Waldron machine. And linoleum, roofing paper, artificial leather, fabric and rug printing, paper and fabric embossing and other specialties, soon became factors in the industrial life of the United States. The gigantic industrial growth represented by all these new industries naturally forced Waldron to grow with it. But it required courage, foresight and the consistent maintenance of real quality to enable the Waldron Company to keep pace with it. But keep pace they did—adding to their plant and production facilities, organizations and lines of machines—until reaching the immense proportions of the service they are rendering to American industry today.

The firm was incorporated under the laws of the State of New Jersey on December 26, 1903, to take over the Waldron business and it was carried on until February 1, 1923, when the John Waldron Corporation was formed to expand and carry on the business.

The American Institute awarded a silver medal to John Waldron Company more than seventy years ago for its products in labor saving machinery. The Centennial Exposition at Philadelphia in 1876 also awarded a medal and showed an exhibit by the Waldron Company, which was an old established firm at that time.

In the early days of Waldron experience, it was a considerable feat to print two colors on wall paper. Today it is common practice to print twelve colors and up to twenty colors with the modern Waldron machines. Likewise, Waldron embossing machines have increased in range of widths from six inches to nine feet as are now used for some special products.

Many executives in particular industrial lines have, through years of contact, learned to consider Waldron as the source of the machinery solely for the industries which they are active in, and do not realize the tremendous scope of the field that the present Waldron organization is serving. How many men in the paper industry, for example, think of the John Waldron Corporation as the manufacturer of the Francke flexible coupling, today playing a vital part in the efficient operation of machinery of all kinds? Yet this coupling, the first coupling ever made to replace the rigid coupling, and the many makeshift devices that were being used, is a Waldron product.

Another Waldron product that is being made and shipped for multiple uses in many different industries, is the Handy-Andy puller. This small, compact, portable piece of apparatus that pulls, moves and lifts is in daily use throughout the country moving machinery, pulling sheet piling, tightening guy lines and economically doing scores of other heavy jobs in a wide variety of fields.

It is common knowledge among industrial executives that if the John Waldron Corporation do not make the kind of machine one is interested in, they probably know and will advise where such a machine may be had.

The success of a policy of consistently maintaining a high standard of quality in products is clearly exemplified by this little machine business started in 1827 that has grown to its present size and position of leadership, with its large, modern plant and home offices at New Brunswick, N. J., and its branch offices in New York, Chicago and Montreal, P. Q., that provide the service and facilities of direct factory branches.

Walworth Company

WALWORTH COMPANY, with head office in Boston, and subsidiary companies and branch houses in New York, Philadelphia, Boston, Chicago, Seattle and Portland, Ore., do a nationwide business in the manufacture and sale of fittings, valves and tools. The company was originally organized in 1841 as Walworth & Nason and later as J. J. Walworth & Company. From 1872 until 1912, for forty years, it was known as the Walworth Manufacturing Company. In 1925, the name of the organization was changed from Walworth Manufacturing Company to Walworth Company, and under the leadership of President Howard Coonley, who had married a granddaughter of C. C. Walworth an era of expansion ensued.

Mr. Coonley took charge of Walworth activities as president of the company in 1912. One of his first acts was to organize it along more modern and efficient lines. Soon the company had five sales organizations in different cities, each of them equipped with warehouses from which they were in position to supply the local trade in competition with jobbers. An export company was incorporated as the Walworth International Company, and in January, 1920, it began business with offices at 39 Broadway, New York. Coincidently with a great growth of foreign business, selling agencies have been established at Havana, Cuba; Buenos Ayres, Argentina; Sao Paulo, Brazil; Santiago, Chile; Sydney, Australia, and Mexico City, Mexico.

In 1925, the acquisition of the National Pipe and Foundry Company at Attalla, Ala., increased its production of cast iron screwed and flanged fittings and added to its list of products a large tonnage of soil pipe. In the same year, the Walworth Company came into possession of the plants and assets of the Kelly & Jones Company, Greensburg, Pa., the third largest producer of valves and fittings in the United States. The purchase included its pipe bending and fabricating shop at Etna, Pa., and several branch houses. The Walworth California Company represents a consolidation of the Mark-Lally Company, a large California distributor, and with it the Mark-Lally chain of California branch houses. Walworth Company now has factories at Boston, Mass.; Kewanee, Ill.; Greensburg, Pa., and Attalla, Ala., and distributors in the principal cities of the world. Its growth under President Howard Coonley's guidance has been quite phenomenal. The other officers are P. L. Coonley, first vice-president; A. J. Mather, J. M. Olmsted and J. S. Mattimore, vice-presidents, and George A. Ricker, treasurer.

Of perhaps greatest technical interest in the history of Walworth during recent years, is the production of Walworth Sigma Steel for high-pressure, high-temperature service.

Waterous Limited

IN 1884, or twenty-three years before the various Provinces of Canada were welded together in confederation, the great establishment of what is now known as Waterous Limited came into being. When all of old Ontario, west of Toronto, was known as "Queens Bush," P. C. Van Brocklin opened a small factory for the manufacture of stoves and ploughs. He was joined four years later by C. H. Waterous, Sr. At this time the power to operate the plant could literally be termed "horsepower," as it was supplied by one horse located in the cellar which journeyed around the floor from morning to night.

The original partnership continued until 1857 when with Messrs. Gould, Ganson & Bennett, Mr. Waterous purchased the interest of Van Brocklin, and operated under the name of Ganson, Waterous & Company. In 1874, the company was incorporated as the Waterous Engine Works Company, Limited.

About this time, recognizing the coming importance of the saw mill industry, the firm commenced the manufacture of steam engines and saw mills, and many old-time mill men in the State of Michigan will remember the Waterous Saw Mill. It was Waterous who, in 1888, introduced the first band mills into Canada, establishing a school for filers at the factory during the winter. It is interesting to note here that the company also made possible the double-cutting band mill.

During the war, it was Waterous Mills that were used by the Canadian Forestry Corps to cut the timber so badly needed by the troops. When the United States entered the war, they were so convinced of the economy and efficiency of the machines used by the Canadian Forestry Corps that they requested the Waterous Engine Works Company Limited to supply them with drawings of their mills, and the method of packing, which request was readily granted.

Some years ago, foreseeing the importance of the pulp and paper industry, the company started the manufacture of equipment for the pulp mill, and are now manufacturing a most up-to-date and complete line of machinery for the conversion of wood into pulp.

Besides manufacturing practically every machine for the pulp mill, this company maintains a large staff of experienced engineers who are continually striving to improve the equip-

ment being manufactured, and who are ready to cooperate with any company who may need their services.

Watts Regulator Company

WATTS REGULATOR COMPANY, manufacturers of steam and water specialties, Lawrence, Mass., has grown to its present size and importance from the business established in 1874 by John Watts, from whom it derives its name. In 1895, the business was sold to Robert F. Pickels, who in turn disposed of it in 1918 to the present owner, Burchard E. Horne.

When Mr. Watts started the Watts Regulator Company, one style only of regulator was manufactured, the old style double lever regulator. Since that time many types of valves have been added and are used in the regulation of steam, water, air, gas and oil pressures. Some twenty-six types of valves are listed in Watts No. 20 catalogue. The Watts Regulator Company was one of the first valve manufacturers to issue a flow chart showing the capacities of Watts valves. The chart can now be had for the asking.

The L. & I. J. White Company, Inc.

THE L. & I. J. WHITE COMPANY, INC., Buffalo, N. Y. was established in 1837, ninety years ago, in the city of Buffalo by two brothers, Leonard and I. Jewett White. Although the personnel of the company has changed with the passing of the years, the majority of the stock is still held by descendants of the founders. The company has steadily increased in size and extent of operations and in 1892 was incorporated under the laws of the State of New Jersey. Early this year the company changed the incorporation to New York and added "Inc." to the name. The company manufactures all kinds of knives used in pulp and paper work—chipper knives for pulpwood, barker knives for removing the bark before the log goes to the chipper, hog knives for cutting away the refuse to put it in condition of burning under the boilers. The L. & I. J. White Company make all kinds of trimming knives for reducing large sheets of paper to specified sizes.

Winslow & Company, Inc.

WINSLOW & COMPANY, manufacturers of clay products, Portland, Me., was originally established under the name, Portland Stoneware Company. The present head of Winslow & Company was connected with the concern from the time he left school and became president when the firm name was changed in 1885. The original products manufactured consisted of stoneware and building material of various kinds but for many years the firm specialized in the manufacture of digester brick for lining sulphite cookers, perforated drainer brick bottoms as used in pulp mill washing pits. The firm were pioneers in clay specialties for paper and pulp mills having been engaged in the manufacture of digester brick and beveled edge drainer brick for blow pit since 1877. These vitrified drainer bricks are fast displacing the old perforated plank drainers. Bleaching cells, acid resisting floor tile and acid resisting pipe are other specialties of the company. Edward B. Winslow is president and treasurer of the company and Seth W. Hearsey is general manager.

I. B. Williams & Sons

THE business of I. B. Williams & Sons, tanners and manufacturers of leather belting, lace leather, etc., Dover, N. H., was started in 1842 by I. B. Williams, with one or two helpers. Sales were made chiefly to local factories at the beginning, but gradually the area of selling operations was extended throughout the state and into adjacent states. Frank B. Williams, oldest son of I. B. Williams was admitted to partnership in 1871 when the firm became I. B. Williams & Son; seven years later George H. Williams, a younger son of I. B. Williams was taken into partnership and the firm name was changed to I. B. Williams & Sons.

In 1882, to accommodate the growth of the business, the plant was entirely rebuilt on a much larger scale, and ten years later another four-story brick building was added, with still another one in 1896.

In the early days of the company, its operations were confined wholly to making flat leather belting and roll covering. Eventually the manufacture of round leather belting, rawhide and surface-tanned lace leather and goodyear welting were added. Flat leather belting has always been the principal product and its sale has gradually grown and become widely distributed in every part of the North American continent and in many foreign countries. I. B. Williams & Sons was one of the first companies to develop waterproof and steamproof leather belting and these now constitute a considerable proportion of the firm's belt output.

After the death of the founder, I. B. Williams, the business was conducted by the sons. In 1910, F. B. Williams purchased the entire interest of G. H. Williams and in 1919 formed it into a corporation, all stock being held by himself and immediate family.

A. Wyckoff & Son Company

A. WYCKOFF & SON COMPANY, Elmira, N. Y., originated in 1855, when Arcalous Wyckoff obtained patent protection on boring machines intended for boring wood pipe from solid timber. This pipe, at first used locally, became better known and the market expanded. Mr. Wyckoff sold the right to manufacture the pipe for the use of water works systems, and a few manufacturers began to supply it for that purpose. The use of wood-stave pipe of large diameters for use as water supply mains, both to municipalities and to water power developments throughout the eastern states led the company to manufacture wood-stave pipe up to forty-eight inches in diameter. Wood pipe has certain advantages over metal and is used extensively for conveying water, white water and stock in pulp and paper mills.

The firm of A. Wyckoff & Son Company was incorporated in 1900, and in 1909 the company expanded considerably and moved into a larger plant. George A. Wyckoff, a son of the founder, was taken into partnership in 1868 and another son Ernest entered the firm in 1879.

The Yale & Towne Manufacturing Company

THE birthplace of the Yale industry was at Newport, Herkimer County, New York, where, about 1840, Linus Yale, Sr., born 1797, began the manufacture of "pin-tumbler" locks of great mechanical excellence. His son, Linus Yale, Jr., born 1821, following in his father's footsteps, became the leading lock expert of his day, and made many brilliant contributions to the art, which have profoundly and permanently influenced it. Just prior to his death in 1868, he formed a partnership with Henry R. Towne, born 1844, to promote the development of the business, from which originated the Yale Lock Manufacturing Company, organized December 9, 1868, whose corporate name was changed in 1883 to The Yale & Towne Manufacturing Company. The products at that time were bank locks, seven varieties of key locks, and the metallic post-office lock box. The employees numbered about thirty-five.

The Yale & Towne Manufacturing Company is a corporation organized under a special charter granted by the State of Connecticut, and located at Stamford, 34 miles from New York City. Its manufacturing organization is centered in the works at Stamford; its commercial organizations are divided between the general offices, located in its own building at 9 East 40th street, New York, and the Stamford offices.

The trade name "Yale" was early adopted as a trade-mark. When the company began business in Stamford, March, 1869, its few products comprised principally bank locks and post-office lock boxes. Additions to the line were made from time to time. The Yale chain blocks are well known in the paper industry. The origin of this product was the differential pulley block, invented by Thomas A. Weston, during the '60's, and first introduced in England. In 1875, the Yale & Towne Mfg. Co. acquired Mr. Weston's American interests and also his services as a consulting engineer. The block business was standardized and developed, and a little later the building of cranes was undertaken. This company was the first in this country to make crane building a specialty. In 1882, a commodious building was erected for this work and a large business was developed for building traveling, locomotive, and other types of cranes. Stamford was an unsuitable location, however, for a heavy engineering product of this kind, and in 1894 the crane business was sold to other parties.

The differential chain block, therefore, was brought out by this company in 1875; the spur-geared chain block in 1889.

The spur-geared block was a great advance in the art. Since 1889 many improvements have been made over the original model. Recent improvements comprise ball bearings carrying the load; better grades of materials are used today, and the parts are more accurately machined. The original model had a cast iron suspension. This was changed to steel several years ago so as to make the suspension a complete line of steel.

In 1892, the screw-geared chain block was brought out, and in 1904, the manufacture of electric hoists was begun. The present-day electric hoist embodying ball bearings, all-steel suspension, high grade steels heat-treated and accurately finished by grinding, is also a great improvement over the models first brought out.

In chronological order, the development of the firm is as follows: Yale & Towne founded in 1868; differential pulley block introduced, 1875; spur-geared chain block in 1889; screw-geared chain block in 1892; electric hoists in 1904.

The Paper Business in Canada—An Industrial Romance

Review of a Century and a Quarter of Phenomenal Growth

By ALLEN A. LOWE

INDUSTRIAL romance is the phrase which describes the history of that lusty young giant, the Canadian paper industry. The beginning of the story of the art of papermaking is lost in the twilight of the dawn of civilization. The history of the paper business in the United States is a story covering nearly two and one-half centuries of gradual growth, commensurate with the expansion of the industrial structure of the country. But Canada's paper business is hardly a century and a quarter old. In itself, the growth of the industry to its present position in such an interval would be a marvel. But the phenomenal awakening of the youngster to his tremendous opportunities has come in the last quarter of a century. It is this awakening which forces into the story of a manufacturing industry—into the story of the paper business of Canada—a romantic quality.

Canada and the Canadian woods have breathed romance for generations. Canada's paper industry is not in any sense the offshoot of the papermaking business of the United States. The strength of Canada's papermaking structure lies in its woods and water power, and the romance of the industry is intermingled with, and grows out of the romance of that sister industry,—Lumbering.

The very names of the builders of the industry in Canada tell of the foundation of a Canadian industry by Canadians—Fraser, MacLean, Logan, Price, Ford, Eddy, and Booth—only a few of the builders of the structure, but enough to give the savor of the families from the old country who have contributed brains and organizing ability to the development of Canada's most essentially national industry.

Canadian inventors, in the days when wood as a source of raw material for paper was first being considered, conceived, at least independently of workers in Germany and the United States, and brought to a degree of perfection, some of the various processes by which wood is now being converted to pulp. Since that time, Canadian paper manufacturers have been fully abreast of the times in producing improvements in the art, while today the Canadian industry is disputing with the world for leadership in contributions to the advancement of the industry from the point of view of inventions and discoveries, mechanical and chemical, and also in the direction of organization—financial and industrial.

So, briefly, this is the story of the growth and position of the paper industry of Canada—romantic in its thoughts of communities created in the wilderness and thousands of horsepower harnessed—romantic in its thoughts of the vision and effort which has built, almost over-night, a structure which stands among the great industrial creations of the world.

Laurier and the Canadian Paper Business

It would be impossible to speak of the greatness of the Canadian paper industry without paying a definite tribute to that Canadian who may very reasonably be credited with having made its final tremendous progress possible. There are two Canadian products which are sold in markets which give full scope to the resources, brains and organizing ability of Canadians. Canadian grain is sold in the markets of the world. Canadian newsprint paper is sold in the markets of the world, as well, but in the most natural market for Canadian made products, the North American continent and particularly the United States, newsprint paper is the one product of Canadian material, power and manufacturing ability which competes on a basis of equality. Whatever may be the influence which today maintains the condition of free entry of newsprint into the United States, it is to this sole survival of Wilfrid Laurier's great thought of reciprocity that Canada owes much of the prosperity of its paper business.

The opening to Canada of the whole continental market has created in the paper business of the continent a homogeneity which transcends the natural organization into Canadian and United States groups. It is unnecessary to mention more than briefly the co-operation between the associations on both sides of the line; the numerous paper mill executives and operators trained in the United States who have joined Canadian organizations; the equally numerous Canadian born and trained paper men who now work in the United States. The most important contribution to the literature of the industry on the North American continent was the joint product of the two technical associations; and interchange of information, ideas and courtesies is unceasing. With due deference to natural national pride on both sides of the line, the paper business of North America is very near to being a single industry. It is for this reason that it is impossible to celebrate the golden jubilee of the American Paper and Pulp Association with a historical review of the industry which it serves, without similarly reviewing the Canadian industry.

The First Paper Mills in Canada

It was in the Province of Quebec that the first paper mill in Canada was erected. Most writers on the subject speak of the mill erected at St. Andrews East, Quebec, on the River Rouge, and operated under the name of the Brown Paper Mills, as the first plant to make paper in Canada. The materials were rags and straw. There is also the story of the mill at Jaques Cartier, not very far from the city of Quebec, which is said to have been first operated in August, 1800. A Mr. Jackson was the proprietor.

The mill at St. Andrews closed down in 1825 owing to the inability of its owner to renew the contract between himself and the seigneury of St. Andrew's. In 1934, the Jaques Cartier mill passed into the hands of the firm of McDonald and Logan and later was operated in succession by Messrs. Peter Smith, Harper and Peter Ford.

It will indicate the character of the methods of operation of that time to quote a statement of a member of the well-known Ford family, Canadian papermakers, who says:

"Mr. Jackson in his time made handmade wrapping paper. Mr. McDonald also made handmade wrapping paper and newsprint and writing paper, and then put in a small cylinder machine to make the same papers. Afterwards, Peter Ford made straw and paste boards and straw wrapping paper. The stock

was brought from Quebec and Montreal—in summer by boat and in the winter by sleighs. The paper was conveyed to market in the same way. Quebec is distant from Jaques Cartier 30 miles, and Montreal is 150 miles, so that carriage must have been quite an item."

The Jaques Cartier mills were in successful operation until 1857 when they were destroyed by fire.

A. H. Holland, about ten years later, projected a newspaper to be published in Halifax, and he furthermore decided that he would make his own newsprint. Accordingly, he erected in 1813 a paper mill in Bedford, N. S., near Moir's Mills. The paper from this mill was used in the first copy of the Acadian Recorder. This newsprint differed somewhat from that now produced as it was made wholly from rag stock.

The first mill in Upper Canada—Ontario—was built in 1820 at Ancaster. There seems to be no record of who built this mill.

From these beginnings, the paper industry grew until in 1827, Lower Canada—Quebec—had three mills. Fifteen years later, there is a record of Upper Canada having 14 mills. These mills were entirely rag or straw paper mills. The industry, like the companion group across the line, paused here awaiting the dawn of a new papermaking era.

The Introduction of Wood Pulp

This came shortly after the middle of the nineteenth century with the introduction of wood as a raw material for paper. It took some time to get the users of paper—the printers and the public generally—accustomed to this new fangled idea. In fact, the head of one of the oldest papermaking companies now operating in Canada related that when in 1882 he joined the sales force of this company, it was difficult to get purchasers to take paper which had any wood pulp in it at all. Nevertheless, as soon as wood pulp processes were invented, mill after mill entered into the production of pulp, and of papers which were partly wood pulp, and the industry grew more rapidly.

The growth of the industrial structure in the United States and Canada, and the development of the production of paper from wood pulp, seem to be inextricably interwoven. This industrial structure is somewhat dependent on advertising, and advertising is somewhat dependent on the supply of inexpensive paper. This inexpensive paper comes from the wood pulp processes. It is interesting, therefore, to note that Canada, whose paper business is principally founded on production of the wood pulp paper, conceived at least independently, if not in strict priority, the first wood pulp processes.

It seems fair to concede that Charles Fenerty, who in 1844 wrote a letter to Messrs. Blachadar and English, of Halifax, inclosing a specimen of paper made from pulp secured from wood by means of "a chafing machine," has conducted an investigation independent of that of Gottfried Keller.

However, it was Keller's invention which progressed through the Voelter devices and the Curtis improvements to commercial use. Still, the first groundwood made in Canada was produced by Alexander Buntin at Valleyfield, P. Q., in 1866, and this was a year before it was made in the United States. The grinders came from Sweden. Production was about two tons per day; wood used was white maple in eight-inch lengths.

A chemical process for the manufacture of pulp from wood was devised by one John Thomson. As it was in 1864 that this gentleman made commercially at Windsor Mills, P. Q., a supply of chemical wood pulp which was made into "beautiful paper" at the mills in Sherbrooke, this may be said to have priority on the continent as the first process successfully to produce pulp and paper from wood.

The experiment which convinced John Thomson that he could make pulp from wood ended in the explosion of the boiler in which he was making the cook. It was only on examination of the fragments collected after the explosion, that Thomson found that he had at last secured a good quality of wood fiber, suitable for making into paper. Similar results were secured independently elsewhere, but the manufacture of the pulp in 1864 by Thomson and his associates, led the world in the production of paper from wood pulp as a commercial proposition.

The mill in which the experiment was made, which resulted in the exploded boiler, was in New Brunswick, but the mill at Windsor Mills, P. Q., in which the pulp was made for papermaking purposes, was the forerunner of the Canada Paper Company. At that time, 1864, the Messrs. Angus Logan and Company owned the property. They gave Mr. Thomson an interest in the business, and he remained with them for several years. Later, however, he embarked on an extensive mill building career. He built mills at St. John, N. B., Kingsey Falls, P. Q., Georgetown, Ont., Newburgh, Ont., Napanee, Ont., and he might very reasonably be termed the father of the woodpulp and paper business in Canada.

The introduction of wood pulp did not necessarily sweep the rag papers from the field, as has been indicated before. Nor is there today any lack of demand for a fine rag paper such as the Rolland Paper Company began to make in 1882 in their mill on the North River at St. Jerome, P. Q. In 1912, this company took over the Northern Mills Company at Mount Rolland, P. Q. A number of other firms are producing bond, writing and book papers, and there is a lively inquiry for Canada's high grade product for export.

The introduction of the sulphite process into Canada came in 1885, when Mr. Charles Riordan built a mill at Merritton, Ontario. His first digester had a capacity of two and three-quarters tons, and was built in Austria. Kraft was first made at East Angus, P. Q., in 1908, in a mill now owned by the Brompton Pulp and Paper Company, and about this time W. W. Woodruff organized the Lincoln Paper Company for the manufacture of high grade manila wrapper and rope manila.

The Beginning of a New Era

The above account reviews briefly the beginning of the paper business in Canada. The condition of the industry about the period of 1880 to 1900 is well summed up by Mr. Howard Smith, now the head of a large Canadian fine paper manufacturing organization, in an article published several years ago. He says: "In those days, the demand for paper was extremely limited, and a great deal of what was used was imported. The mills in Canada were small and not very profitable. With the final solving of the problems of using wood in the manufacture of paper, and the establishment of the E. B. Eddy Company's mill at Hull, I think may be recorded the first genuine advance in the paper industry. I well remember that when the Eddy mill was started, the rest of us felt there would be no place in the paper trade for anybody else."

It is interesting to speculate on the subject of how much Canada owes the ultimate development of its extensive newsprint manufacturing industry to that leader in other industrial lines, Sir William Van Horne. In 1887, a Mr. John Forman built at Grand Mere, P. Q., a large groundwood pulp mill. As the ownership of the site of the mills passed from one hand to another, there came into existence a newsprint paper mill and a sulphite mill, all of which was finally known as the Laurentide Company. This company was the first in Canada to devote itself exclusively to the manufacture of newsprint paper. Up to 1902, however, the proposition could hardly be judged a financial success.

In the course of changes in controlling interest, Sir William Van Horne came into financial contact with the company's affairs. It was apparent to him that the trouble with the company lay in its management, and he sought for an experienced paper mill operating manager who might have some chance of bringing the affairs of the company into order, if indeed, it was profitable to manufacture newsprint paper in Canada at all. That it was not at that time necessarily considered profitable was evidenced by the following quotations from the Pulp and Paper Magazine of Canada in numbers published about this time.

One official of the International Paper Company wrote in May, 1903, "The United States today is making more paper than it requires, and Canada is likewise. Therefore, the development of the industry must be very gradual, or it will bring disaster to the vast capital already invested in it. Efforts of promoters to induce capital to locate mills in Canada regardless of the demand for the product, or the competition already existing, and in ignorance of other conditions in the industry, can but unfavorably affect Canada's industrial prospects."

A pulp dealer writing in the Pulp and Paper Magazine in June, 1903 says, "There is much talk of papermaking in Can-

50 YEARS OF PROGRESS 1878-1927

ada, but the difficulties that attend the manufacture of paper in an out-of-the-way place are not understood, or they would never be contemplated for a moment. . . . In ventures of this sort, we should strongly urge that anybody desiring to go into the paper trade should make his pulp in Canada and his paper in England."

However, the Laurentide Company had paper machines already installed and Sir William Van Horne believed that they could be made profitable. He secured from the ranks of the International Paper Company's executives a mill operating manager. In a few years, the company had paid dividends in cash and then in stock. This proved that it was possible for a Canadian company to engage profitably in the manufacture of newsprint alone, without other supporting or subsidiary interests such as lumber or other forest products. Had Sir William failed to analyze so accurately the possibilities of the newsprint manufacturing business, or had he failed to select so capable an agent as operating manager, the growth of the paper business in Canada might have been put off for years.

Two Major Factors in the Canadian Growth

At any rate, the Belgo-Canadian Paper Company, J. R. Booth's paper mill, Price Brothers' mills at Kenogami, The Brompton Pulp and Paper Company's newsprint mill at East Angus, the Spanish River mills at Espanola and Sturgeon Falls, and the mill at the Soo, sprang into being in quick succession on Laurentide's demonstration that newsprint paper was a money making industry for Canada. The existence of this group of manufacturers, in addition to the E. B. Eddy Company's newsprint interests, and those of other paper companies, which had begun to make newsprint on machines built for other purposes, enabled the Canadian paper business to profit by the situation left by Laurier's attempt to effect reciprocity with the United States. The United States publishers were quick to take advantage of the idea of free entry of newsprint into the United States and this alone survived after the battle in the election of 1911 in Canada. Beginning about this time, Canadian newsprint went into the neighboring country without duty.

Another factor which contributed largely to the growth of the newsprint industry in Canada was the prohibition of the export of pulpwood cut on crown lands. Crown lands are lands owned by the various provinces, which in turn lease to paper manufacturing companies the right to cut timber at so much per stump. This constitutes the most important supply of pulpwood in the country and its cheapness, as compared with the investment necessary to hold the title to the pulpwood growing lands, is so great that now, and in fact in 1925, as the first year Canada produced more newsprint paper than does the United States, and the increase in Canada's margin of production over the United States production has grown larger in every month of 1926.

Recent Growth and Changes

The production of newsprint paper in Canada comes very decidedly to the front beginning with 1911 for the reasons outlined above, and by 1917 the following proportions existed between the various classes of paper manufactured:

Newsprint	684,829 tons
Boards	51,784 tons
Wrappings	47,016 tons
Book and Writing	15,292 tons

While there has been a constant growth in the production of the other classes, especially in kraft wrappings, the newsprint end of the industry, owing to its export possibilities, has grown from the figure given above for 1917 to a probable amount in excess of 2,000,000 tons for 1927.

An offshoot of the paper and pulp business, through the use of sulphite pulp as the basic raw material, is the manufacture of rayon. In 1926, a statement was made that the Kipawa mill of the Riordan division of the International Paper Company was now supplying half of the rayon or artificial silk in the world.

This is only one of the enormous activities of the International Paper Company in Canada at the present time. The International Paper Company is, in fact, the greatest single force in the Canadian paper field today. Its mills at Three Rivers and near Ottawa are the last thing in mill construction, and in addition to its enormous newsprint production in these units, the International has the Riordan sulphite pulp mills at Hawkesbury and Kipawa. It has been for several years the policy of the company to produce more and more of its total supply of newsprint paper in Canada, and the expansion of the present mills, or the addition of others may very well emanate from the development of this policy.

The increase in newsprint production in Canada has come from the erection in desirable locations of a number of manufacturing units. There is a tendency on the part of these units to combine for purposes of securing economies in manufacturing, purchasing, sales and administration. Among these combinations the most prominent are the Spanish River group formed from the companies which originally operated at Espanola, Sault Sainte Marie, and Sturgeon Falls; the St. Maurice Valley Corporation, a combination of the St. Maurice Paper Company, the Belgo Canadian, Donnaconna, Port Alfred, and Canada Paper; and the Abitibi Power and Paper Corporation which is expanding through absorption of other units.

In the fine paper field the Lincoln Paper Mills, the Howard Smith Paper Company, and the Provincial Paper Mills are combinations, each of which has resulted from the logical grouping of similar interests in one corporate body.

Prairie Provinces and the West

While all kinds of paper were manufactured in the East, from the very beginning of papermaking in Canada, it needed the coming of newsprint making to start activity in the West. The beginning of the paper industry in the Province of British Columbia was first made in 1909. In spite of the lateness of the start, the industry in that province has grown by leaps and bounds, and now takes third place in provincial rank of producers of pulp and paper. Manitoba is also making a beginning, and the prairie provinces hope to come into the field through processes for the utilization of straw for the manufacture of newsprint.

1914 saw the inception of the Canadian Pulp and Paper Association, which now for thirteen years has brought all who have the good of the industry at heart together, to aid in the solving of mutual problems. The caliber and foresight of this association is shown by its recent decision to found a research laboratory in connection without McGill University. Technical problems relating to the various paper mill processes will be studied intensively. The results which this institution may be expected to achieve will be of the greatest value to the mill operators.

The first president of the Canadian Pulp and Paper Association, Carl Riordan, is the son of that Charles Riordan, who brought the sulphite process to Canada shortly after 1880. Beginning with Carl Riordan, the presidents of the association have been chosen from among the keenest minds in the industry, and therefore, the association has shown a growth commensurate with its tremendous possibilities for service.

The latest development in the Canadian Paper business is a movement to limit the production of paper to an amount commensurate with the probable supply of pulp wood in perpetuity. This, it is proposed, will be done by declining to permit the building of more mills than the timber resources of the country will support. This is a piece of constructive statesmanship which follows logically on the prohibition of the export of pulpwood cut as crown lands, and will preserve to Canada forever its most important manufacturing industry. Furthermore, by preventing the denuding of watersheds, it will also preserve for Canada its wealth of waterpower.

The consummation of such a movement as is outlined above would fittingly round out the century and a quarter of toil which has produced in Canada an industry which marches shoulder to shoulder with its companion industry in the United States. The Canadian papermakers have had valuable stores of natural advantages on which to start, but the development of the Canadian paper business is due to sound business sense, and whole hearted effort and co-operation on the part of all concerned. If the Canadian industry can develop effectual means of preventing the indiscriminate consumption of its forest resources, there will be for Canadian papermakers a perpetual future of flourishing timber limits, and unending crops of pulpwood for a ceaseless supply of paper to meet an ever increasing world demand.

Fiftieth Annual Convention of the American Paper and Pulp Association

Second Oldest Trade Association in United States Celebrates Golden Anniversary

"THE fiftieth and the finest!"

This was the delineation commonly heard among the hundreds of paper manufacturers and other members of the paper industry in attendance at the golden anniversary convention of the American Paper and Pulp Association and affiliated associations, held on the four days February 21 to 25 in the Waldorf-Astoria Hotel, New York.

The convention this year was different. There was something in the atmosphere—maybe it was purely pyschological but it was there just the same—which gave a distinctly changed complexion to the annual gathering of papermakers in the Metropolis of the country. One would surmise that after doing the same every year for half a century an event such as the yearly get-together of paper mill executives would become somewhat of a routine matter and there would be little or nothing to differentiate between one annual convention and another.

The golden anniversary convention, however, had been very well press-agented throughout the industry, and the result was a record-breaking attendance. There were representatives of mills from various parts of the United States and Canada; there were mill presidents, vice presidents, general managers, chemists, salesmen, purchasing agents, and, in fact, men from every part of a paper mill's executive family in New York in by far larger number than ever before graced an annual convention of the American Paper and Pulp Association. There was greater enthusiasm among the conventionites; there was a larger attendance at the dozen or more meetings of the smaller organizations affiliated with the parent association; there was a spirit of greater cordiality and good-fellowship than has been observed at previous conventions, and there appeared to be a greater desire among the paper manufacturers to co-operate with one another in the common aim of benefiting themselves and their industry.

President D. Clark Everest

Elsewhere in this issue will be found a historical sketch of the American Paper and Pulp Association. Sufficient is it to state here that this organization is the second oldest trade association in the United States, which means that the celebration of its golden anniversary is a feat which only one other trade body in this country has thus far been able to enjoy.

There were no outstanding developments at the fiftieth annual convention of the A. P. and P. A. other than the election of a new group of officers. The talks and discussions at the general meeting of the parent association and at the affiliated organizations were rather of non-spectacular character yet none the less interesting and important.

D. Clark Everest Elected President

At the general meeting of the American Paper and Pulp Association on Thursday, following three days devoted to numerous meetings and conferences of the various affiliated organizations, D. Clark Everest, of the Marathon Paper Mills, Rothschild, Wis., was elected president for the ensuing year, succeeding Norman W. Wilson, of the Hammermill Paper Company, Erie Pa., who had served two terms as chief executive of the association and who stepped down from the presidency with many bouquets of praise and appreciation from the membership for his hard and faithful work on behalf of the association in the last couple of years.

S. L. Willson, of the American Writing Paper Company, Holyoke, Mass., was elected eastern vice president, and Felix Pagenstetcher, of the Byrant Paper Company, Kalamazoo, Mich., was elected western vice president. These succeed the newly-elected president, Mr. Everest, who had been a vice president for two years, and Alexander G Gilman, of the Allied Paper Mills, Kalamazoo, Mich., who also served as vice president for two annual terms.

The following were elected to compose the Executive Committee for the coming year: Hugh J. Chisholm, of the Oxford Paper Company, New York; Norman W. Wilson, retiring president, of the Hammermill Paper Company, Erie, Pa.; Milton E. Marcuse, of the Bedford Pulp and Paper Company, Richmond, Va.; W. L. Carter, of the Nashua Gummed and Coated Paper Company, Nashua, N. H., and J. P. Hummel, of the Hummel-Ross Fibre Corporation, Hopewell, Va.

The nominations for president, vice presidents and members of the Executive Committee were made by George W. Sisson, Jr., a former president of the A. P. and P. A. and chairman of the Nominating Committee on behalf of that committee, which consisted of Mr. Sisson, Albert R. Smith, of the Keith Paper Company; Frank L. Stevens, of the Stevens & Thomp-

son Paper Company, and G. Frank Merriam, of the Holyoke Card and Paper Company. In putting forth the name of Mr. Everest for president, Mr. Sisson paid tribute to the character and ability of the proposed new executive, and also spoke with much feeling on the retirement of President Wilson. "Only those who have gone through this thing know just what it means to step down out of the presidency," said Mr. Sisson, who added "that nevertheless we feel repaid for the time and effort put into association work by the wide circle of close friends, well-wishers and supporters we know we have made while serving the industry through the association."

There were no opposing candidates named, and, on motion, the secretary was instructed to cast one ballot electing all of the nominees, which was done.

Meeting Opened by President Wilson

The meeting was opened by President Wilson promptly at the scheduled time of 10:30 a. m. on Thursday in the spacious Astor Gallery of the Waldorf. The annual message of the President was a masterpiece, both from a rhetorical standpoint as well as the logic in the chief executive's remarks. President Wilson gave a complete survey of the association's activities during the past year and also made, with reservations, recommendations for the new administration in the year to come. Mr. Wilson's address follows in full:

The President's Annual Message

It is a real pleasure to meet with you upon this our Fiftieth Anniversary and to present what custom has seen fit to term "The President's Annual Message."

In spite of the strenuous work of this our annual convention week, I am sure we must all feel inspired to accomplish in our business meetings today as much constructive work as possible.

Because of the importance of planning for the future, I would much prefer to allow the work attempted during the past year to speak for itself, and devote my entire message to recommendations for the future. However, I have been persuaded that in order to properly introduce any very far-reaching suggestions for the future, it is necessary to go into some detail as to how much affairs have been handled and are being handled right at the present time. With that in mind I shall try to cover as broad a field as possible without consuming too much of the time allotted to our total program.

Guiding Principles—First and foremost I should like to state that every project undertaken and every decision made has been based upon the principle that the purpose of this Association is to promote the welfare of the industry at large. There has been a painstaking effort to observe the principle that this Association should avoid participation in any activity where the interests of the members clash and that our first duty in considering any project was to determine:

1st, will all of the membership be benefited? If so, act.

2nd, will the interests of part of the membership be benefited without damage to others? If so, act.

3rd, will the interest of some of the members be benefited at the expense of the balance of the membership? If so, refrain from action.

If there has been any case in which we have not followed the above principle, it has not come to my attention.

The next principle we have attempted to follow is that if action is desirable, let it be as prompt and effective as possible.

None of us will claim that we have measured up to this principle one hundred per cent, but I feel that we are going forward and that the future will find steady improvement in this respect.

Another principle, which the officers, the Executive Committee, and the staff have tried to observe steadfastly, has been that when in doubt, to unhesitatingly consult our membership, either as a whole or through the recognized leaders in each group in order to clear the way for a proper decision.

By the same token we have unhesitatingly called upon the members, through their recognized leaders, to carry on activities which your elected representatives and staff did not feel capable of assuming themselves. At the same time I have found the Vice-President, the Executive Committee, and the staff not only willing to carry their share of the burden, but anxious to directly proceed with every piece of work which they were equipped to do rather than to throw the burden upon the shoulders of others.

I wish to go further, on behalf of the Executive Committee and the other officers, in an expression of warm approval not only for the willing but for the capable manner in which Dr. Baker, and the men and women associated with him, have conducted the affairs of the Association. There is an astonishing amount of work handled by that group. Much of it, to be sure, is detail in nature and yet all of it has to be supervised, directed, allocated to the proper people and carried through to conclusion.

I presume one of the reasons for the large amount of this work is that our industry is so diversified. In addition to matters of detail, every day seems to bring not one but often many matters quite out of the ordinary. Frequently, information must be acquired before action is possible. All of this seems to have been carried on promptly and capably by the staff.

If there still be any question as to the need for a centralized headquarters for this industry, I am sure it would be removed from the most skeptical of our membership could they but spend a day now and then at the Association headquarters and thus become intimately acquainted with the work being done.

However, in spite of the willingness and ability of the staff to carry the major part of the load, and the desire of the Executive Committee and the officers not to burden others with too much of a load, there are certain pieces of work for which we have had to ask assistance. In such instances, your Executive Committee has authorized the appointment of Committees who have unselfishly devoted their time and efforts on behalf of the members at large.

Finance—You will recall our financial troubles of some years ago. They were regrettable but valuable, and I trust that the strict economy resulting therefrom will continue to be practiced so that every dollar that is spent may continue to bring us a higher return than could have been possible without this experience.

Due to added membership, and the action of some of our old members in voluntarily increasing their dues, we have been able to re-establish certain important services and also carry on new work. By strict economy we have carried through all work allowed in the budgets of the last two years; we have added some work and yet not exceeded the budget, and we have succeeded in establishing a moderate surplus. Principle credit for this is due to Dr. Baker and his staff because of their care to absolutely refrain from spending money until it was actually in hand.

While this in itself is a satisfactory situation, the fact remains that such important work could not be provided for in the budgets, nor carried on because of limitation of funds.

I trust the time will come when we will have an income which will permit the industry to be served in many ways not thus far possible and, furthermore, that a material reserve can be set up making it unnecessary when an emergency arises to place work which should be done by this Association upon the shoulders of individual manufacturers due to our inability to finance the job ourselves.

This thought is not primarily mine, nor does it come from the staff. It has been voiced to me on many, many occasions during the two years of my presidency.

Committee Activities—All committees of major importance are appointed through consultation with the Executive Committee and with members principally affected by or informed upon the subject in hand.

Always an effort is made to have representation for every group and every district affected. At times it becomes necessary to sacrifice the one for the other, in order to insure placing the work in the hands of those best qualified to get results.

Naturally the best men are not always available, due to absence or other commitments. Delays then result but if your patience has been tried, you have been most gracious about it.

Mention should be made of some of the principal committees now at work. Let us first discuss the Membership Committee because it has had so much to do with strengthening

the Association, not only during the past year but during the year previous. The men composing it, and particularly the chairman, have had a long hard grind but they have stuck manfully to the task. They have brought in new members; they have persuaded old members, who had withdrawn, to reaffiliate themselves with us; they have brought the Association to a point more nearly representative of the entire industry as to grades of paper and types of mills, large or small; they have also persuaded a number of our members to increase their financial support.

Largely through this combination of activities, the Association has been enabled to expand its budget, to renew certain work that had been temporarily discontinued, and to undertake new activities not previously attempted.

Best of all there has been made available the advice, the counsel, and the influence of the executives of these new members, a number of whom have already evidenced a most encouraging willingness to shoulder their full share of our responsibilities, to work upon important committees, etc.

There will be a report of the specific results obtained by this committee later in the day but their efforts have been so painstaking and so beneficial to the Association that I felt obliged to make special reference to it at this time.

Stream Purification—This is a subject which has been with us, in one form or another, for many years, with each mill attempting to handle the problem practically single handed. Last year the industry decided to place the entire responsibility in the hands of this Association with the recommendation that an attempt be made to obtain co-operative action from the officials of those states where the subject was being, or likely to be, agitated, or where unreasonable legislation had been passed or was likely to be passed.

This responsibility was accepted and a committee appointed whose efforts and progress are a credit to the industry.

I am sure you will have no regrets for the action which you took last year when you receive the report of this committee.

Two other important committees are studying respectively "New Uses of Paper" and "Distribution."

These have been more recently appointed and each has a complicated problem to solve. I am sure you will be gratified when you learn what they have under way.

Import Committee—You are all familiar with the fact that this committee was established and is being supported by the manufacturers individually and is not directed by this Association.

The principle reason for this situation is that when the need for this committee became apparent, we did not have the money to finance it, nor did we have as members a number of mills whose support was vital.

Now practically all of the supporting mills are members of this Association.

Furthermore, through interlocking directorates so to speak, close contact is maintained and real teamwork practiced.

I hesitate to say to what extent this industry, and therefore other industries connected with and at least partly dependent upon the paper industry, would have been damaged were it not for the fine accomplishments of the Import Committee, and I urge the continued support, financially and otherwise, of all concerned.

Earlier in the year it seemed that the Import Committee, appointed by the National Paper Trade Association, was showing an inclination to function in opposition to the Import Committee representing the manufacturers. This was recently brought to the attention of the president of the National Paper Trade Association. Assurances of hearty co-operation have since been given us and the merchants suggest a joint conference between the manufacturers' committee and theirs in order to insure complete harmony. I recommend that we assist in bringing these committees together.

There are a number of other committees which have been called in to service during the year and reports of which have been submitted to the members from time to time.

Then there are committees made up of representatives of various industries to which certain of our members have been appointed. One of these is the National Wood Utilization Committee. This takes in all of the industries producing and using wood in one form or another. I presume you have observed reports by this committee in the daily press and magazines dealing particularly with products of the forest. This whole work is under the direction of a small Executive Committee which in turn operates under the direction of Secretary Hoover.

You will be glad to know that Dr. Baker has recently been appointed to this Executive Committee by Mr. Hoover.

Another type of activity is illustrated by our representation on the Executive Committee of the Chamber of Commerce of the United States. I need hardly stress the growing influence of the Chamber. I am sure we are all gratified with our success in having Mr. Milton E. Marcuse elected to the Executive Committee of the Chamber, and grateful to him for the active part which he has taken.

We also have a National Councillor to the Chamber of Commerce in Mr. L. M. Alexander, who has ably carried our problems to them and brought back their problems to us.

Of equal importance is our contact with the National Industrial Conference Board. Mr. Sisson has been elected an associate member by the Board. Our Association membership entitles us to two delegates—Mr. C. A. Crocker, and until recently Mr. E. R. Behrend, have been our delegates. Both have represented us ably and with regularity at the monthly meetings of the Conference Board. Dr. Baker and I have regularly received personal invitations to these meetings which he has attended regularly and which I have attended when possible.

Then there are frequent conventions and meetings of groups, large and small, in which we are invited to participate. Such meetings may be held in Washington, New York, Chicago or other important centers. Usually it has been possible for us to be represented through the good offices of certain of our members located in adjacent territories. When this is not possible, particularly in or near New York, Dr. Baker, Mr. Porter, Mr. MacNaughton, Mr. Burke and more recently, Mr. D. A. Crocker and Mr. Paul S. Hanway, take care of these responsibilities. They also take care of European visitors, extending or receiving hospitality as the case may be. How they manage to survive is a mystery to me.

Foreign Contacts—For years this Association has been attempting to build up friendly relations with foreign paper and pulp producing countries and steady progress has been made. Our members have been encouraged to visit foreign paper and pulp mills when abroad.

Dr. James E. Campbell made a definite contribution through his visit to Scandinavian countries several years ago and by means of the reception and courtesies which he recently extended here in New York to a prominent group of foreign and domestic manufacturers.

Our Executive Secretary, at his own expense, made a special trip to European pulp and paper producing countries shortly after he became associated with us.

Last spring, the Association managed to finance a similar trip for Mr. Porter. We in turn have been visited by the leading European manufacturers who have been received officially by the Association and welcomed to a number of the mills of our members.

We have been invited to hold a conference with Scandinavian paper and pulp manufacturers in connection with meetings of the International Chamber of Commerce at Stockholm next June. Already two or three of our prominent members have declared themselves available. This offers the opportunity to appoint a Scandinavian Conference Committee which I am sure will meet with your approval.

Naturally, our closest contact has been with our Canadian friends. You will recall that at the last annual meeting, recognizing that so many problems of production and distribution, either in Canada, or the United States, were fundamentally the same, you authorized the appointment of a Committee to meet with a similar committee representing the Canadian Pulp and Paper Association. I am happy to refer to the cordial reception which this plan met with by the officials and members of the Canadian Pulp and Paper Association.

The plan was predicated upon a discussion of non-controversial subjects; in fact, your committee was restricted to that type of discussion as we understand was also true of the Canadian Committee.

You have had a report, through our trade papers, of the very cordial discussion which ensued and of the principal topics which were listed for consideration. The feeling of both committees is that certain of our problems may be solved at less expense of time, effort and actual money through joint action than either Association can accomplish single handed.

I for one am proud to have had part in this movement, confident that a better understanding, friendlier relations and tangible mutual benefits are bound to result. Above all things, I believe the Canadian Committee members are convinced that we seek no benefits that are not mutual, and we are convinced that they on their part seek no selfish advantage.

Before leaving this subject I wish to read to you a resolution passed at the recent annual meeting of the Canadian Pulp and Paper Association:

"RESOLUTION AS TO FIFTIETH ANNIVERSARY AMERICAN PAPER AND PULP ASSOCIATION, Passed by CANADIAN PULP AND PAPER ASSOCIATION at their Fourteenth Annual Meeting, Montreal, Canada, January 26, 1927.

"Whereas, our sister organization in the United States, the American Paper and Pulp Association, is on the eve of celebrating its fiftieth anniversary; and

"Whereas, we recognize in the American Paper and Pulp Association a trade organization from which we have gathered much inspiration and one to which we are indebted for encouragement and assistance in the early days of our own Association; be it therefore

"Resolved, That we place upon record our acknowledgment of such indebtedness and our appreciation of the harmony and goodwill which have always characterized our relationship, and which this year have resulted in the establishment of a Joint International Committee representing both associations; and that we hereby extend to the American Paper and Pulp Association our most cordial felicitations upon their Golden Jubilee and our most earnest desire that many more years of progress, prosperity and usefulness may follow."

In response you will doubtless wish to make appropriate reply later in the day.

We are engaged in world commerce, whether or not we realize it. We must have full knowledge regarding the production, consumption, and stocks on hand of our principal raw materials. We must have even more complete information as to the total production, consumption and stocks on hand of the material we produce and sell. We must have other statistics including the closest knowledge as to the volume and trend of general business at home and abroad.

With this in mind, authority for the employment of a skilled statistician was given at the last annual meeting. One of the particular hopes which we had was to employ a man who not only could take care of general statistical work but would also be of such calibre as to be able to accurately effect a digest of the many economic services now being purchased by our members, apply this to the paper industry, and eventually save our members the money and the time now expended on perhaps five or six of those economic services.

Just such a man was found available and in the few months he has been with us he has made a fine impression. He is to appear on the program later in the day and at that time I shall be glad to present him to you.

Every week letters are coming in from our members, expressing the opinion that the weekly report is already commencing to replace the outside service.

This is a fine illustration of economy through centralized effort.

Tariff Protection—The commerce of this Nation has been extended to its present volume upon the basis of protection to domestic industry. So long as this general policy is continued, this industry cannot possibly maintain its equilibrium with the commerce of the Nation at large unless protected to the full extent of the present law.

We have already sacrificed the future development of certain important branches of our industry through lack of proper tariff protection. A study of the facts discloses that even where protection is now afforded, it is upon a lower basis than applied to many other domestic commodities.

The responsibility for this whole subject has been placed in the hands of a Tariff Committee whose personnel will, I believe, give satisfaction to the entire membership. It is the plan of this committee, probably through sub-committee, to consult directly every branch of the industry in order to bring each branch into complete harmony as to its own tariff requirements, so that when the main committee finally presents its recommendations to the paper authorities, these recommendations may have absolutely undivided support from our entire membership.

It is further hoped that this committee may then be in position to speak not only for the pulp and paper producers of this country, but may have the support of all who depend wholly or in part upon this industry for their commercial existence.

You can readily visualize the size of the job which the Tariff Committee has undertaken and I am sure we must all be grateful to the men who have agreed to undertake this work, and further, that we will evidence our appreciation by complete and wholehearted co-operation with them.

Recommendations for the Future—I realize that an executive, upon the eve of his retirement, may hurt rather than help the new administration by proffering too much advice; and yet, whether his contributions have been large or small, his experiences should enable him to recognize what weaknesses exist with some idea of how they might be corrected; where the principal strength lies and how it might be further capitalized and extended.

I have been urged to speak without restraint. May I do so?

Perhaps our principal weakness has been our inability to establish complete membership of all producers of paper and pulp in this Association. This has been very substantially corrected by the pronounced success of the Membership Committee. Nevertheless, even now there are several prominent influential mills and quite a number of smaller ones whom we have not been able to persuade; on the other hand, very recent experiences with some mills, who heretofore had shown no interest whatever, justify the belief that it is getting to be somewhat easier to bring outside mills into the Association. Perhaps this is because of some of the problems which obviously need united action, perhaps because our entire membership seems to be so cordially inclined toward the Association and so willing to help in every way possibly, and even perhaps because the Association is actually making itself felt a little more effectively year by year.

Whatever the reason, I am convinced that conditions are ripe for another membership drive and I urge that this be put into execution without delay.

Thorough Organization of Affiliated Groups—In addition to complete membership in this the central Association, each important group should be organized. The fact that certain groups are not organized at all and others only partly, is proof that this statement may not meet with your immediate approval. But above all things, let us face the facts.

The statistician finds an extremely chaotic condition in his attempt to obtain complete statistics, particularly pertaining to unorganized groups. Part of the trouble results from confusion as to classification and terms. While the central organization can eventually, and will if you wish it to do so, clear up this confusion and furthermore, not only assemble but distribute statistics as to group production, consumption, etc., the officers and staff agree that most of this information should come to us after having been obtained and analyzed by each individual group.

Then in turn our statistician could concentrate his efforts upon the group information obtained, place it side by side for such comparisons as you may wish, and also give you complete, reliable figures for the total industry.

Furthermore, more practical use of this information can be made by the individual mill, if his group is compactly organized and holds quarterly meetings at which this information is studied.

Let us first consider the situation with our pulp mills: The Pulp Producers Association has been in existence for a number of years. For some reason or other, its membership has been relatively small, so much so that its officers and Executive Committee have repeatedly questioned the advisability of continuing it. Each time this question has arisen, it has

seemed advisable to continue it. Each time this question has arisen, it has seemed advisable to carry on if for no other purpose than to maintain at least a skeleton organization in the event of some emergency arising requiring group action to protect the interests of the pulp producers.

It is my earnest recommendation that the leaders in this field give this subject renewed consideration.

Let us now consider paper: At the time of our last annual meeting the following important groups remained unorganized:

Book; Bristol; Glassine; Greaseproof; Waterproof Wrapping; Absorbent Papers, and Specialties.

At the present time we are assisting two of these groups to organize. We have also assisted the Grocery Bag Manufacturers to reorganize. They in turn have applied for membership in the A. P. & P. A., and we also have application from the Wall Paper Manufacturers, Envelope Manufacturers and Book Binders Association.

Of the groups still unorganized several have the matter in hand.

The Executive Committee joins me in recommending that leaders in each group lend their assistance to this movement.

There is another type of organization which should be fostered, well typified by the Supply and Equipment Association, Inc. This was organized about two years ago and is founded upon the platform of supporting our activities morally and financially. This platform has been strictly adhered to by these good friends. Our appreciation can best be evidenced by a continuation of hearty co-operation with them in assisting to extend their membership and otherwise working closely with them.

Future Financial Structures—Until recent years, our income was derived principally through the various associations who are members of the A. P. & P. A.

In 1923, this method was changed and since then each member pays his dues direct to us.

When the present structure was arranged, the committee in charge sought to establish a common basis for all, calculated upon the annual sales or production of each mill. This was impossible because we did not have sufficient information regarding the sales of our members, nor did we feel justified in establishing a rate until something could be done to make our membership more completely representative.

Therefore, it became necessary to fix the dues for each member at approximately the same amount which he had been indirectly paying us through his organized group and the members who have been acquired since have in turn been charged in proportion to the old members.

Obviously this is an arbitrary method, unsatisfactory to those who have had this work in charge as it must be to the members themselves.

Today we are in much better position to establish a common basis. Our membership has reached a point justifying the expectation that a rate once established would not need constant revision.

I, therefore, urge that you now consider adopting the principals of a uniform basis of membership dues, upon gross sales, and that your officers be authorized to study this subject and bring forth recommendations.

To put officers in position to act intelligently, it would be necessary for each member to acquaint the Association with his 1926 sales and production. They could then submit a plan for the approval of the general membership and final action taken not later than the beginning of the fiscal year 1928.

Service on Foreign Patents—I assume that most of our members keep themselves closely informed on domestic patents related to the industry. I assume they also attempt to keep informed on foreign patents. I doubt that any of us keep fully posted.

It should be possible, at no great expense, to establish a clearing house at association headquarters, for both domestic and foreign patents.

There are certain services of a rather general nature now being rendered by one or another of our affiliated groups but not rendered to the industry at large. I recommend that you consider appointing a committee to study these services and to determine whether they would be beneficial to the membership of the central association and whether other similar services might be introduced.

Unless this subject is approached from a non-competitive attitude, duplication of effort and of expense can readily result. However, if the subject is approached from a purely business angle, it should be possible to prevent duplication, to extend the service to a greater number and to reduce the per capita cost.

Years ago there was some feeling that this Association was inclined to duplicate work instituted by some of our group associations. For that reason we have been reluctant to institute any service for our broad membership that had been originated by one of the smaller groups. However, I am confident that benefits may come from a study of the subject.

This afternoon we shall be addressed by a real authority on "Business Conditions as Applied to our Industry." Separate from that I wish to remind you, as I did at our last annual meeting, that when this Association was first organized, one of its principal problems was that the industry then, half a century ago, was suffering from over-production. Over-production with the exception of a few short periods, has been the principal problem of this and every other industry. Together with the high cost of distribution it constitutes a major problem at the present time.

Our salvation depends upon obtaining basic facts, not as historical data but from month to month and week to week while the date is actually usable.

Salvation also lies in the development of new uses of our product, thus helping to keep the wheels turning full time. It lies in improved methods, higher efficiency and superior management. Let us bear in mind the tremendous possibilities as yet almost untouched in the field of research chemist and engineer. Last year, with admiration, we viewed the centralized plan of research as announced by the Canadian Pulp and Paper Association. The progress which our Canadian friends have made must be highly gratifying to them and must commend our deep respect.

I again urge our members to extend their efforts individually and collectively in the research field.

Splendid work is being done by the Technical Association, the Superintendents' Association and the Salesmen's Association.

All of these should receive our hearty support.

The Cost Association—From time to time it has been recommended by the Executive Committee and the secretary of the Cost Association, that the A. P. & P. A. undertake to direct and financially carry this work. The subject has been recently discussed by their Executive Committee and ours. It is claimed, and I believe soundly, that every one of our members could profit through active membership in the Cost Association. The proper alliance between them and us, together with thorough group organization, would make an excellent combination. With the proper statistical knowledge of the existing total production of any grade of paper, knowledge of existing demand for that grade, of stocks on hand, of the total consumption of that grade, the definite cost of producing it, and the prices obtainable, any manufacturer should be able to properly determine his sales policies, eliminating the hazard of assumption.

Likewise, with this knowledge before him to determine intelligently when to invest for expanded production and when not to extend.

Without the fullest knowledge and consideration of all three of these elements, management can neither conduct the distribution of its present output with complete intelligence, nor it properly deal with the subject of capital expenditure.

I understand that a determined effort will be made to increase the membership of the Cost Association and I recommend that we all lend our support to the success of this effort.

We frequently hear the American business man declare that there are altogether too many associations and that they should be decreased rather than increased. I admit that there is some justice to this opinion with relation to associations of a general nature. However, we are now discussing directly concerning our own industry and our own individual business. If the A. P. & P. A. is worthy to exist, it is because of the service it is rendering to the industry at large. If it

Picture taken at the fiftieth annual banquet of the American Paper and Pulp Association, February 24, 1921, at the Waldorf-Astoria Hotel, New York City

is rendering this service to the industry at large, every producer of pulp and paper in this country, including present non-members is benefiting at least indirectly. Obviously, the benefits to the individual mill will be more pronounced when he has direct access through membership in the Association to its full service. It, therefore, becomes the duty of every such manufacturer to do his share of the work and shoulder his share of the expense.

The steady increase in membership indicates that this duty and this opportunity is being recognized more and more.

If this Association becomes the powerful institution which, if properly fostered, it is destined to be, the time is coming when it will be considered a privilege rather than a duty to share in the work, and to participate in the benefits.

This situation cannot be brought about over night, it means years of effort, constant improvement in policies, practices, organization and management.

I am convinced that this industry is not lacking in men of wisdom, men of initiative, men of ability, men of high ethics, who can carry this Association onward and upward, and who will do so if given the encouragement and the support to which they are entitled.

May I say that this conviction is based upon the inspirational experiences which I have had during my connection with this Association and particularly during these last two years when you have done me the great honor to allow me to act as your chief executive.

Every last bit of loyalty and encouragement which I could have wished has been extended by the other officers; by the Executive Committee; by Dr. Baker and every individual of this staff; by Mr. Burke of the Cost Association; by Mr. MacNaughton of the Technical Association; by Mr. Naylor and Mr. Stewartson who have participated in our Executive Committee meetings; by all of the affiliated groups; by all of the committees; by the individual members; and decidedly by our trade papers. All must recognize that the real burden of this Association is on Dr. Baker and his staff and yet there seems to have been a conviction that the elected officers and the Executive Committee were making a conscientious effort to shoulder their responsibilities, and to act only for the good of all, constantly hoping that upon this occasion when we become relieved of our responsibilities you would be satisfied that the standing and the future possibilities of the Association have not been impaired but upon the contrary that these have been somewhat enhanced.

Personally, I would not surrender a tiny part of the pleasure and the satisfaction that have come to me through your loyal support for a thousand times what effort I have put into the work.

Please believe me when I say that I very deeply appreciate every effort that has been made on behalf of the Association and the countless demonstrations of friendship which you have extended to me directly and through the Association.

In spite of our best intentions, I do not doubt that there must have been many occasions when criticisms seemed justified by individual members or perhaps even groups. Such of these as have come to my attention have in every case been presented with graciousness and a desire to build up rather than tear down. I am sure you will find your new administration just as appreciative as we have been of your constructive criticism. You have no idea how big and indefinite this Association can seem to be when one first undertakes to direct it, and how helpful it is to obtain advice, and how relatively compact and warm hearted the Association proves to be as one becomes more intimate with it. After all, the ultimate strength of this Association will not be reached through science of organization and management so much as through an over-expanding confidence in each other and warm hearted genuine support of the administration and the staff.

With that as a foundation and with the caliber of men whom you will select from time to time to carry on the work, the other essentials will follow as a matter of course.

I, therefore, close with the plea that you extend to the new administration and to the staff all down the line your utmost consideration and your heartiest support, and in making that plea I am commissioned by the retiring officers and Executive Committee to extend our very best wishes and to promise our full co-operation throughout the years to come.

Treasury in Sound Condition

Dr. Hugh P. Baker, executive secretary-treasurer, reporting as treasurer, stated that the association was in a healthy financial condition, that it had lived during the past year within its income and that the budget for the coming year agreed on by the Executive Committee was also kept within the anticipated income for the year. Total income during 1926, Dr. Baker reported, was $55,546 and expenditures amounted to $54,907. Surplus in the bank as of March 31, 1927, the end of the association's fiscal year, would be $14,000. A budget covering the amount of $69,920 had been determined on for the fiscal year beginning April 1, 1927, with the clear understanding that the income would not be exceeded. Dr. Baker also reported that the Executive Committee had decided to adopt the plan of assessment of dues on the membership of the association on the basis of annual tonnage production, and that the officers had been authorized to put this system into effect by January 1, 1928.

Dr. Baker's report as secretary follows in full:

FIFTY YEARS OF ASSOCIATION WORK IN THE PAPER INDUSTRY

Report of Dr. Hugh P. Baker, Executive Secretary

The year 1927 is the 50th year of active work of the American Paper and Pulp Association. There has been a change in the name of the Association twice since the organization meeting at Saratoga Springs in 1878, and it is conceivable that the time may come when there will be a demand for an organization, to cover all phases of the larger paper industry which might result in further change in name. But after all what's in a name when the purpose and the men behind the purpose continue in the accomplishment of desired objectives.

Fifty years ago paper mills were very much scattered and often very much isolated. This isolation had its advantages and disadvantages. It would be interesting to trace the effect through the years of this isolation upon the development and the business of the industry. Gradually new mills were built until we have come into a period of paper mill districts, such as western Massachusetts, northwestern New York, the Miami Valley in Ohio, the Kalamazoo district, and the Appleton-Neenah section of Wisconsin. As several mills became located in the same district, manufacturers gradually came together, resulting in better acquaintanceship and in appreciation of common problems and common needs. It was quite to be expected that the first appreciation of a need for organized effort should have come from the Holyoke-Springfield section where there were a number of mills located in the 70's, and where men from the mills had been getting together from time to time.

The writing paper manufacturers of Massachusetts had formed an organization for defensive purposes as early as 1861, and there were some efforts made between 1861 and 1878 to bring larger groups together. Finally in the spring of 1878, a group of manufacturers got together in Springfield and decided that because of serious overproduction, unsatisfactory prices and harmful foreign trade, it was time to bring about a meeting of representatives of all of the mills in the eastern half of the United States. A call was sent out, signed by men like General Plunkett, Messrs. Whiting, Chapin, and others, for a meeting at Saratoga Springs in August 1878. When the meeting was called to order by General Plunkett there was great surprise that so many representatives of mills could be gotten together. General Plunkett was elected chairman of the first meeting and on the second day of the meeting a nominating committee brought in a slate of officers, and Mr. Wm. Whiting of Holyoke was elected first president.

It is interesting and significant that matters under discussion at the first two day meeting at Saratoga Springs are matters which are of vital concern to the industry today. With no anti-trust legislation in existence at the time, there was, of course, frank discussion at the first meeting and at many subsequent meetings, of such matters as restriction of production, price cutting, harmful trade practices and destructive foreign competition. History has indeed repeated itself through the years of the Association's activities.

The first secretaries of the Association were mill executives

and for many years the secretary was an unpaid officer, and the headquarters of the Association were a drawer in an officer's desk.

There has been a gradual but very great change, of course, in the character of the Association and its work for the paper industry. As is seen so often in the life of any individual or organization of individuals, the Association has had its ups and downs, strong and aggressive during one period, weak and ineffective in another period. However, over the years, the Association has gradually become stronger, more representative of the industry, and more effective as a service organization.

During the first few years of the Association, while those who formed it were convinced that there was definite need for an organization, there was effective work carried on. In the late 80's and 90's, there was a tendency for groups to get together in certain districts for discussion of the intimate problems of that group, and the Annual Meeting of the Association became more or less of a social affair, rather a reunion and an opportunity for contact with the trade generally. Now and then as the industry was confronted with tariff revision or some specific need there was a strengthening of the work until the specific need passed. Through all of the years of the Association, paper and pulp manufacturers, consciously and otherwise, were becoming convinced of the value of organized activities so that in the years before the Great War and during the War it was possible to get the Association onto a business basis and make it of real service to the industry.

Through many of the earlier years of the Association, there was but one general organization, with different sections representing the different groups of the industry. Gradually and for one reason or another some of the groups became dissatisfied with the central organization and separate organizations were formed. During the last ten years, it has been recognized by the industry and the Articles of Organization of the Association so direct that one of the functions of the Association is to assist in the organization of new and unorganized groups. Within the past five years, however, with the growing recognition of the need for the industry to present a united front in the larger common problems of tariff, taxation, raw materials, foreign competition, etc., there has developed a tendency toward a stronger centralized organization. This has not meant the weakening of the affiliated organizations but rather a clearer line of demarkation between the activities of the affiliated organizations and the central organization, with the resultant strengthening of the central organization so that it can meet industry-wide problems in a satisfactory way.

The Men Who Have Made the Pulp and Paper Industry of the United States—A book of intense interest might be written on the subject of the men who have made the pulp and paper industry of the United States. Very brief reference only will be made to the subject in this report, particularly as it will be a topic of discussion at the 50th Annual Dinner of the Association.

Any discussion of the men who have built our industry must, of necessity, be based upon a character study and an appreciation of the fact that the pioneers and the leaders, in the development of this fundamental American Industry, represent a very interesting type of American manhood. The early pioneers of our industry must have been men of vision and aggressiveness, always tenacious of the idea of establishing a satisfactory business on the basic need of an essential commodity.

Could we have known the manufacturers in our industry of 75 or 100 years ago and could we have made a character study of these men, it is very safe to assume that the type which might have been evolved from the study would be very comparable to the typical paper manufacturer of today. After all, men change but little through the years. Channels of thought and activity may be changed but qualities of humaness and originality and aggressiveness have doubtless been the same throughout the history of the paper industry in this country.

Could there be selected the typical paper manufacturer who might represent the paper industry of the United States today it is probable that like the fathers he would show the strong influence of the geographical location of his mill, and its product. In other words, the average man in the industry is influenced by his locality, his surroundings and his product. Therefore, unless a man is above the average he may be reluctant to make himself felt in the general business life of the country. The average paper manufacturer of today is as able and aggressive as any other business man in any other national industry, and yet he often seems loath to make himself felt in the larger national and international movements with which the country is confronted. This is not a suggestion that the average manufacturer should not take care of his own business first, but rather that he has lived too close to himself and his business to appreciate the opportunity that is always present to do his share in shaping the larger policies and destinies of his state and nation.

The Association in 1926—With increased membership, making the Association more representative of the entire industry, with aggressive leadership of the officers and the Executive Committee, and with much better facilities within the Association for the giving of service to its membership, it is but stating a known fact to say that 1926 has been the best year of the Association. Thirty new mills have been added to the membership of the Association during the year, through the constant and aggressive assistance of the Membership Committee, headed by Mr. Charles A. Gordon of the Oxford Paper Company, making a total of 50 new mills during the past two years. As a number of these new mills are important factors in their particular groups of the industry, it can be appreciated that the president of the Association has accomplished an unusual service through establishing the Association as really representative of the industry. This larger and more representative membership places a very definite obligation upon the Association, to make its service of greater value to the end that membership dues paid by the mills will be considered a good business investment. This challenge your officers have accepted with the result that the past year has been a year of hard work and we believe definite accomplishment.

Confidence as between men is a fundamental factor to the carrying on of business today. Equally so, confidence among the members of the Association and by the members in the Association's officers and staff is fundamental to successful association work. Confidence between men requires more than a knowledge that a man is sound financially and that he usually lives up to his word. Acquaintanceship and understanding is a necessary factor in confidence. In an organization representing mills scattered from the Atlantic to the Pacific, and from the Canadian line to Mexico, it is not easy for the secretary and his assistants to get the acquaintanceship and understanding which is so fundamental to the development of confidence by the members in their secretary and his staff. Possibly the weakest phase of the Association's work today is the inability of members of the staff to make regular visits to the mills. It is hoped that his situation can be improved and the members of the staff may each year visit most of the mills in the different sections. An attempt to solve this particular problem has been made through the holding of luncheons in the different mill districts where the president and secretary have met the members and have presented Association activities. Luncheons have been held in three different sections the past year, but this is but a beginning and it is hoped that during the coming year the officers and the staff of the Association may be able to meet at luncheons and in other ways the member mills in each of the different regions in which groups of mills are located.

The present year has seen the development, under the direction of a trained statistician, of a strong statistical service by the Association. While the statistician was not brought into the Association until late in the year, his work is already showing excellent results and there is promise of further developments in the way of monthly reports on raw materials, etc., which give promise of helpful returns to the members.

The forester in charge of the Woodlands Section has continued his surveys of different pulpwood producing sections, begun in 1925. A thorough survey, covering nearly two months of field work, has been completed in the Virginia-North Carolina section, and report on this district is ready for the printer. If arrangements can be made, it is proposed to have this survey of pulpwood conditions extended the

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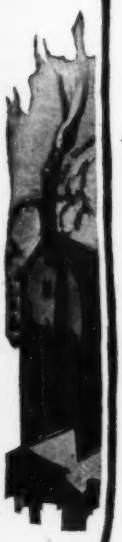

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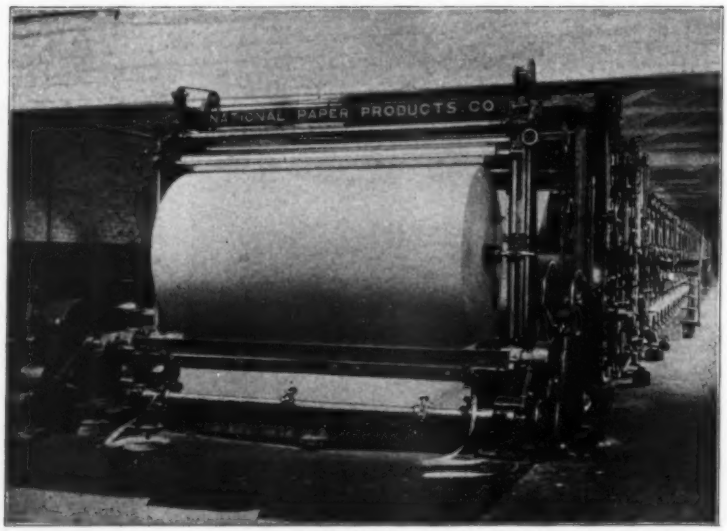

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coming spring and summer to northern New England and New York. We are hopeful that the secretary of the Woodlands Section may become of greater use to individual companies in the preparation of plans for the management of timberlands, and in other ways. Certainly with the problem of a continuous supply of pulpwood one of the most vital in the industry, it should be possible to make the services of the Association's forester of greater value.

Under the definite obligation put upon the Association in its Articles of Organization, to assist in the organization of unorganized groups, the Association has, during the year, given exceedingly helpful service through its Assistant Secretary Mr. O. M. Porter, to smaller associations which cannot employ a full time secretary, and to groups desiring to form a helpful organization. This type of service has demanded so much time of the Association's staff that during the past year it became necessary to have two of the smaller associations, namely, the American Waxed Paper Association and the National Gummed Tape Association, take on a man to give his entire time to these two organizations. The new secretary of these two organizations, Mr. Marshall C. Warwick, is now well established and there is promise of large usefulness in the work of these two groups. Upon being relieved of the secretaryship of the two associations taken over by Mr. Warwick, Mr. Porter was immediately drafted to assist in the organization of two groups which were organized formerly but which have not had an association for some years. These two groups, the glassine and waterproof wrapping paper manufacturers, have held meetings and there is promise of association development.

As one analyzes the results of association activities in the paper industry, it becomes more than apparent that it is helpful to the entire industry to have every group helpfully organized. There are still several unorganized groups and it is hoped that the Association may be helpful in bringing these groups into associations of their own. Beyond a doubt, there is less satisfactory business and more unsatisfactory practices in the unorganized groups than in any of the groups which now have satisfactory association organization.

It is difficult, doubtless, for the manufacturer who is not in close touch with the work of the Association to appreciate the amount of detailed work with which the staff is confronted. In fact it may be easy to ask the question as to what the staff is doing in New York as the weeks and months pass. It would be exceedingly helpful, not only to the staff but in the development of association work in the industry, if every member could spend an hour or two during the year in the offices of the Association to see something of the innumerable inquiries coming to the Association from its membership from the State and Federal bureaus, and from the public. It is manifestly advantageous to the industry to have these inquiries answered accurately and promptly. It would mean little to say that the Association received so many letters and sends out so many letters, and that its work takes what the staff itself appreciate as altogether too much time for detailed activities. It is a real question as to whether the staff is not spending too much time attending to necessary details in the office and too little time in visiting member mills.

A Year's Business—Business in 1926 in the paper industry has been good; generally speaking, very good. Production has been large, possibly too large in some of the groups, and profits have been fair. In his last year's report, your secretary referred to the great importance of a frank facing of the over-production problem in a way that would make for reasonable solution of the problem on a sound, legal basis. Neither the government nor any outside agency can help or interfere, over any length of time, with the normal working out of our economic problems. We must ourselves face our own problems of production, distribution, and research. As the need arises there will be outstanding leadership from among the mills and in the industry as a whole that will let us do effectively for ourselves we need to have done.

The paper industry is far from alone in facing a difficult distribution problem. Economical and effective distribution is a fundamental phase of any year's business. Repeatedly during the past year, in discussing the business of the industry with manufacturers, the statement has been made that distribution is the weakest link in the chain. If this is a fact, it is a situation which the industry itself must meet in a practical, businesslike way. It has been proposed that the Bureau of Foreign and Domestic Commerce should make market surveys in the paper industry. As the taxes paid by paper manufacturers are used in support of every activity of government, we are justified in getting such assistance as we can from Washington. However, experience has proven that in practically every activity affecting the industry, the industry itself can do the work that needs to be done as satisfactorily and much more expeditiously than having the same work done by a governmental agency. This Association, representing the entire industry more fully today than ever before, is the logical agency for the giving of any service which may be necessary in the industry. Give the Association funds to do the work properly and we are confident that results desired can be secured.

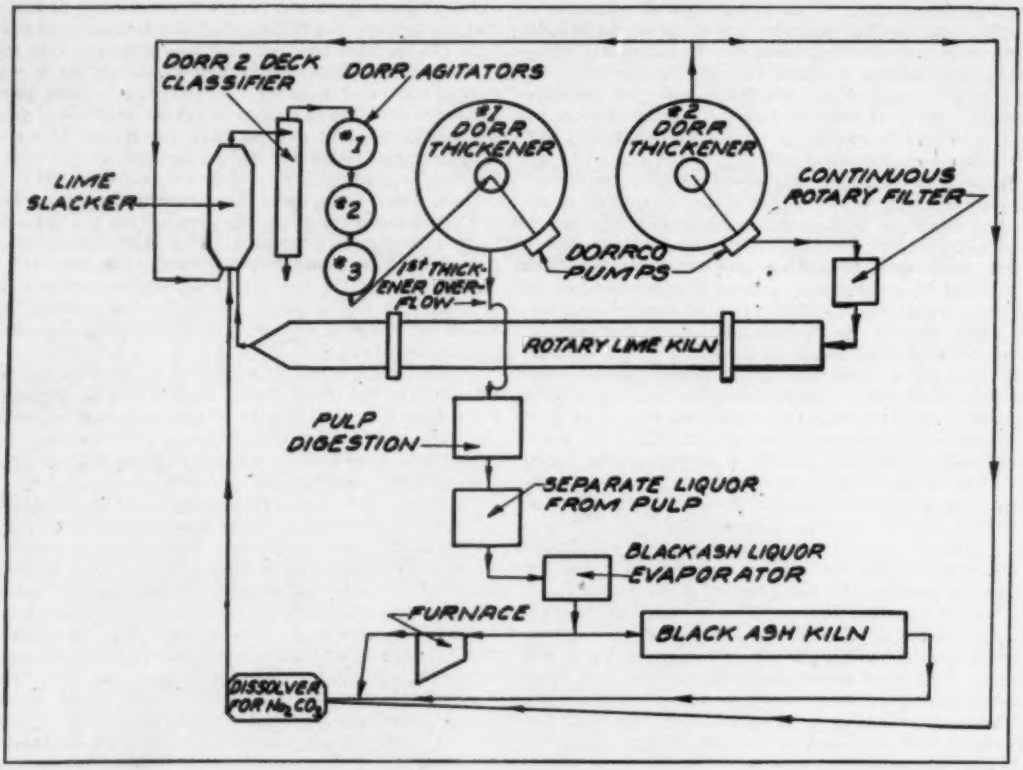
There has been but little change in the raw material situation during the past year. Pulpwood and rags have been easy and from the surveys of the pulpwood situation in two different regions we are confident that as time passes the industry will be able to solve its own pulpwood problem and that without going outside our own borders.

In referring to the year's business, it would be out of place to mention the service of the Association in issuing a weekly survey of business conditions. This survey is prepared by the Association's statistician with great care and is checked carefully by the staff before being sent out. As indicated previously, we have estimated that the paper industry is spending from twenty-five to forty thousand dollars in subscriptions to various economic services which are operated on a profit making basis. We believe that both time and money can be saved the executives of the industry through the use of such an accurate statement of business conditions as the weekly survey. Unlike the numerous economic services, the Association makes no comments or prophecies of any kind in this survey but confines it to facts as we determine them from reports submitted to us by the industry, from bank letters, financial papers, etc.

An Adequate Cost and Financial Service for the Association—It is a fact, borne out by evidence, that the mills generally are not making the profit which should be made from the manufacture of pulp and paper. There are exceptions, of course, and we would like to indicate our belief that the exceptions prove the rule, but this does not appear to be so. If a fair and reasonable profit is not being made, then it is the business of the industry and the associations serving it to do everything humanly possible to so change conditions that fair profits may be made.

One of the important factors in meeting this situation would seem to be the determination by the industry and the associations of facts of such a character as to allow the individual mill to determine why a fair profit is not being made and how the situation within the mill can be changed. Complete and accurate statistics are a type of facts which have proven to be exceedingly helpful in making it possible for the individual mill to chart a profitable course. Sound cost accounting methods and accurate composite financial reports are being recognized in other great industries as activities and knowledge fundamental to profitable business. The industry has a Cost Association, whose work is being carried on by an able cost accountant. It is surprising that the support of this important work should fall upon comparatively few of the mills, when sound cost accounting methods and accurate information as to financial conditions are needed throughout the industry. We are hoping to make arrangements whereby the services of the Cost Association may be extended more widely among our member mills, but this arrangement can be carried out on a practical basis only as sufficient funds are made available. Certain of the groups in the industry have gone much further than others in furthering cost work and in determination of helpful financial reports. If one group can profit by this form of service it is certain that other groups can profit similarly.

What's Ahead in Raw Materials—It is difficult to say what factor in the paper industry is the most important one; that is, whether raw materials, manufacture, distribution, or proper financing. Of course it is perfectly evident that all of these



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phases or factors must be taken into consideration in successful operation. However, the foundation upon which manufacturing, and all that follows, is based, is a satisfactory and permanent supply of raw materials. There are two forms of raw material, namely, wood and cotton rags, which are outstanding and which probably never will be replaced by any of the so-called substitutes. The backbone of the supply of raw materials for the paper industry is wood.

The interesting fact that the paper industry is the only great industry in this country which has changed largely its form of raw material within a human generation has been pointed out in previous reports. There are men at this convention who can remember when groundwood and other forms of wood pulp came into general use in the industry. The very fact that we are using so generally what is really a new raw material indicates the possibilities ahead in the further refinement of this raw material. There is hardly a gathering of chemists today where the chemistry of cellulose and the possibilities of further refinement of cellulose is not discussed. The manufacture of rayon from wood pulp is a striking example of the way in which wood pulp may be brought into competition with the textile industry. There is little question but that we shall see further refinement of cellulose and that the pulp and paper industry will crowd the cotton and woolen industry seriously in the next 25 to 50 years.

Much has been said and written in the last 25 years as to the disappearing supply of pulpwood in this country. While we are cutting our forests more rapidly than they are growing, yet there is a very much larger supply of timber in this country today than the most optimistic forester forecasted 25 years ago. Our forests are being protected from fire, attention is being paid to forest renewal, so that growth is slowly catching up with use. It is quite possible that if the supply of pulpwood and pulp coming from outside our boundaries should be cut off our industry could go on at the present rate of production almost indefinitely. Should such a situation arise and, of course, it is not conceivable, work would be done in the protection and renewal of our forests that is not considered practical and profitable today and we would solve our forestry problem in a very much shorter time than general conditions now warrant.

The pulpwood situation today is easy though it may become more difficult as the years pass before we shall attack the problem of forest renewal on a basis that will give us a permanent supply. One has but to consider the 220,000,000 acres of forest land in the South, an area seven times the size of the State of New York, and the millions of acres of excellent forest land in northern New England, New York and the Lake States, to appreciate our possibilities in the way of wood production.

The other raw materials of prime importance to the industry, such as rosin, sulphur, clay, glue, dyes, etc., have been much less discussed than pulpwood and rags and, therefore, less is generally known about them. Investigation of some of these last mentioned raw materials by the Association during the past year has emphasized the necessity of our having information not only as to the production of these raw materials but as to how they are used in other industries, how they are sold and how we may maintain satisfactory quality, etc. Too often in the past we have not paid especial attention to these minor raw materials until we were faced with an investigation by the Tariff Commission or by some other emergency. The Association should keep itself and the industry thoroughly informed as to all forms of raw materials and it is our purpose to begin immediately the issuance of a brief monthly report on raw materials that will indicate not only production, stocks on hand, etc., but will reflect the use of these raw materials by other industries, price trends, etc.

Financing the Association—The history and the service of the Association has been such through the past years that the problem of financing it on a satisfactory basis is, unfortunately, a real association problem. From the experience of other national associations, now well organized and financed, it is very apparent that it would be much easier for us to finance the Association in a way that would be satisfactory to the industry as well as to the Association if we could obliterate entirely from the minds of the manufacturers the past history of the Association. For some years, and not long ago, the Association was a very nominal sort of an organization, somewhat social in form, and held together apparently for the purpose of holding an annual meeting. Seven years ago, upon my becoming secretary of the Association, a startling and disconcerting fact was emphasized to me and that was that the only interest of some of the manufacturers in the Association was that it held an annual meeting. Fortunately, under the able leadership of strong executives who have served the Association as its elected officers during the past seven years, the situation has been changed and it is recognized that the Association is a service organization and that it can be a profitable investment to those supporting it.

Three years ago, as the result of thorough study and hard work on the part of a Finance Committee, followed by action of the Association, we were able to get away from an impossible and hopeless plan of financing which never allowed the Association to know what its income would be from year to year and onto a basis that has made it possible to operate without a deficit and with a small reserve from year to year.

There is one more very definite step to be taken in putting the Association onto a sound financial basis. Representing, as we do, all groups of the industry and both manufacturers and converters, it has seemed like an impossible task to work out an equitable basis for the assessment of dues that could be applied easily and fairly to every mill. During the past three years a great deal of work has been done by your officers in co-operation with the Membership Committee in trying to fix dues to be paid by individual mills on a fair and reasonable basis. Because of the wide diversity of the industry, it is clearly impossible to fix dues upon a tonnage basis. One mill may be making a dozen different grades of paper with wide variation in value; therefore, it is manifestly impossible to fix a rate based upon tonnage for such a mill. Your present officers have given much thought to this problem the past two years and every time that the matter has been discussed they have come around to the same point and that is that the only equitable method is the assessment of dues upon the basis of gross sales. It is the opinion of your secretary that in such an industry as ours the problem of assessing dues will never be solved until they can be based upon a low percentage of gross sales.

A number of other national trade associations have struggled with the problem of financing much as we have, and have come to the gross sales arrangement. This method, applied on the basis of a reasonable minimum and maximum, is the only method that is fair to all, large and small. It is greatly to be hoped that this last outstanding problem in the work of the Association may be appreciated and solved during the coming year.

There is one other phase of the financing of organized work in the industry which must be met eventually and solved on a sound economical basis. With the very moderate income under which the Association is working, which is very carefully budgeted by the Executive Committee, it is impossible to finance emergency activities as they arise in the industry. The result of this has been that if a special piece of work became necessary, a special committee was appointed and a special appeal made to the industry for support. This is neither economical nor efficient because it immediately increases overhead costs in organized activity and is annoying because it means meeting repeated calls for funds by the executives. In a billion dollar industry such as ours, it should be possible to give the central organization of the industry sufficient funds not only to carry on such necessary work as may be decided upon by your representatives on the Executive Committee, but a reserve of sufficient size to meet every emergency activity. If the central organization is not organized in such a way as to take care of these emergency activities, then it is time that the membership take matters in hand and see that there is an organization able to take care of every piece of work that needs to be done.

The Association's Program for 1927—It has been the aim of the officers and staff of the Association during the past seven years to put before you from year to year a definite program of work. From our standpoint it is difficult to con-

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Hydraulic Variable Speed Drives for Paper Mill Machinery

Following Is a List of Recent Paper Mill Installations:

	A. P. W. Paper Co.	Albany, N. Y.	1 Second Press Drive
	Babbitt-Kelley Co.	Bellows Falls, Vt.	1 92" Fourdrinier Paper Machine Drive
	Brown Company	Berlin, N. H.	2 Tube Machine Drives
	Brown Company	Berlin, N. H.	1 152" Pulp Cutter Drive
	Crocker-McElwain Co.	Holyoke, Mass.	1 102" Drier Drive
x	C. H. Dexter & Sons	Windsor Locks, Conn.	1 96" Fourdrinier Paper Machine Drive
xx	Eastman Kodak Co.	Rochester, N. Y.	1 11-Section Machine Drive
xx	Eastman Kodak Co.	Rochester, N. Y.	3 Special Machine Drives
	E. B. Eddy Co.	Hull, Quebec	1 100" Fourdrinier Paper Machine Drive
	Robert W. Gair Co.	Montville, Conn.	1 120" Rewinder & Slitter Drive
	Robert W. Gair Co.	Piermont, N. Y.	1 120" Rewinder & Slitter Drive
	Hollingsworth & Vose Co.	East Walpole, Mass.	1 110" 6 Cyl. Paper Machine Drive
	Hollingsworth & Vose Co.	West Groton, Mass.	1 86" 4 Cyl. Paper Machine Drive
	Keith Paper Co.	Turners Falls, Mass.	1 6-Section 86" Fourdrinier Paper Machine Drive
	Keith Paper Co.	Turners Falls, Mass.	1 Special Drive
	Kieckhefer Container Co.	Delair, N. J.	1 122" Rewinder & Slitter Drive
	Mars Paper Corp.	Westfield, Mass.	1 72" Fourdrinier Paper Machine Drive
	Millers Falls Paper Co.	Millers Falls, Mass.	1 90" Fourdrinier Paper Machine Drive
xxx	Parsons Paper Co.	Holyoke, Mass.	3 Paper Machine Drives; 1 84", 1 85" and 1 86" Fourdrinier
	Parsons Paper Co.	Holyoke, Mass.	1 Paper Cutter Drive
	Rolland Paper Co.	Mont-Rolland, Quebec	1 100" Fourdrinier Paper Machine Drive
	Strathmore Paper Co.	Woronoco, Mass.	2 Special Calender Drives
	Strathmore Paper Co.	Woronoco, Mass.	1 Paper Cutter Drive
	Strathmore Paper Co.	Mittineague, Mass.	1 2-Section 86" Fourdrinier Paper Machine Drive
	Strathmore Paper Co.	Mittineague, Mass.	1 Special Calender Drive
	Geo. W. Wheelwright Paper Co.	Hardwick, Mass.	1 86" Fourdrinier Machine Drive
	Geo. W. Wheelwright Paper Co.	N. Leominster, Mass.	1 114" 4-Cyl. Paper Machine Drive
xxxx	Whiting Paper Co.	Holyoke, Mass.	2 Paper Machine Drives; 1 62" Fourdrinier, 1 66" Fourdrinier
	Worthy Paper Co.	Mittineague, Mass.	1 66" Fourdrinier Paper Machine Drive

X—Three Additional Paper Machine Drives on order (2-72" and 1-96" Fourdrinier). When the installation of these three drives is completed, this mill will have all its paper machines equipped with the Universal Hydraulic Variable Speed Drives.

XX—These are not paper machines, but method of operation and control being precisely the same as in paper mill operation, they are included in this list.
One additional drive on order.

XXX—All Paper Machines in this mill are equipped with the Universal Hydraulic Variable Speed Drive.

XXXX—One Additional 86" Fourdrinier Paper Machine Drive and one Paper Cutter Drive on order.

PAPER MANUFACTURERS INTERESTED MAY INQUIRE OF ANY OF THESE USERS AS TO RESULTS OBTAINED FROM THESE INSTALLATIONS

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ceive of a going organization such as we have tried to make of the Association without a definite program of activities.

Strange as it may seem to you as business men, it was a difficult thing for your secretary when he came in the organization in 1920 to find what the program of the Association was at the time and what its objectives. Repeatedly the statement was made to him by executives that they did not know what the Association was doing and they might well have added, what the Association was for. This is in no sense a reflection upon the Association in the past, but rather an indication of our strong belief that the Association's membership should know its program and what it is seeking to accomplish from year to year. It has been the constant aim of your secretary to inform the members of the program of the Association, what it is doing and what it is accomplishing. This has been done through the printing of leaflets and booklets, through the holding of sectional luncheons, and through personal contact.

It has been very difficult to outline a definite program of work of recognized helpfulness to the mills and put such a program into effect both because of the feeling in the industry that the Association deals only with large general problems, and because of the fact that these general problems are not often of direct and vital importance in the daily activities of the executives. It is much easier to show results in a program dealing with the intimate, business activities of the executives than a program covering the larger, more general problems of the industry, as vital as these may be. It has apparently been very difficult at times for the members to appreciate the fact that small economies, effected in a given operation in a mill; in the purchase of raw materials or supplies or in other ways may be entirely wiped out by an action coming out of these so-called general problems such as some adverse ruling by the Federal Income Tax Bureau or of some other action from the outside, yet the Association has a program which is being carried out as aggressively as possible.

A truism, almost out of place here, is the old saying that a man gets out of an organization only what he puts into it. We are rather generally agreed that the man who complains that he is getting nothing out of a business or social or religious organization is the man who is putting nothing into it. Is it out of place to emphasize the fact that a business man will get little or nothing from his trade association unless he uses it? By your financial support you have built up a series of machines in the paper industry, in the form of trade associations. Are you getting the efficiency and production from these machines which you have a right to expect? As we observe and study the workings of our own trade associations and those serving other national industries, we are constantly surprised at the amount of available information, at the helpful contacts, and at the opportunities for service, which are in fact frozen capital. What the associations have is yours for the asking. The secretaries of your associations are working constantly for the same end which you are seeking, and that is profit and permanency in the industry. We beg you to make use of your associations.

As now organized, under the leadership of the eight able and representative men whom you have put upon your Executive Committee, the Association is in better position than ever before to give direct, helpful and profitable service along the following lines: 1—Statistics. General for the entire industry and special for groups. Emergency statistics—available to every member; 2—Information. Upon any question affecting the industry—available to members, to the industry and to the public, where it is helpful to the membership to serve the public; 3—Legislation; 4—Committee Activities. The Association's Committees on Taxation, Tariff, Distribution, New Uses, etc., are always ready to work—with your assistance and at your demand for work; 5—Foreign Contacts; 6—Woodlands Section; 7—Arbitration; 8—Conventions and groups meetings; 9—Technical and merchandising research; 10—Emergency service.

Active work by the Association along lines indicated above is indeed a program. We want you to know the program and help us to make it an effective one for the industry.

For 1927 it is the aim of the Association to continue its present activities without spreading itself too thin, and to add, if time and funds allow, service along the following lines:

1—Development of Foreign Trade; 2—Engineering Service—to meet the stream purification problem and similar problems; 3—Cost and Financial Service; 4—Assistance to the Technical and Superintendents' Association in apprenticeship training; 5—Trade Promotion and Co-operative Advertising.

Perhaps the program is too ambitious, yet those of us who are working with you in the Association are so constantly in touch with the needs of the industry that we think we can see clearly the vital importance of every item referred to in the above program. It might be easy in one sense, though not at all easy for your staff, to sit back and mark time until there is overwhelming demand for a certain form of service before it is undertaken. We do not interpret our service to you on that basis. If the secretaries of your associations cannot have an industry-wide vision of conditions in the industry, and if they do not have somewhat of the elements of leadership, they should be replaced by men who do have some vision and some elements of leadership.

Better Business Ahead—The celebration of the 50th Anniversary of the Association is indicative of the belief of paper manufacturers through the years that it is helpful to work together in trade associations. The trade associations in our industry have brought friendship and understanding and confidence. The confidence which you have in each other and in your associations is making for stability in the industry. Stability means better business ahead.

You will hear this afternoon, doubtless, in the discussion of the topic "General Business and the Paper Industry in 1927," of the factors that are making for sound business in this country, and therefore better business ahead. It would be out of place for me to even refer to these various factors at this time. American business is sound and whatever elements of understanding and the help which will come through the organized efforts of our association that we shall continue to produce more and better paper, and let us all hope with profit.

Good business ahead means more efficient manufacturing, more attention to research of the right character, better training of the men who are to do our skilled work, and of the men in our offices, better understanding of distribution and more knowledge of the factors which influence the progress of business in this country. We have made great progress in all of these things, as we have made progress in our association work, but there is very much yet to be done and is there anyone in the industry, who is thinking soundly of these various elements of our important business, who will not agree that we can do more by organized attack than by following a policy of isolation.

Better business will come to our industry as the unorganized groups of the industry get together for the profitable Association work that is already being carried out by a number of the groups, and a step further when all of the groups unite to present a united front, through the American Paper and Pulp Association, in waging the contest which we shall always have in meeting undesirable trends in our social, political and business life. Better business ahead depends not only upon the efforts of the individual in the office and in the mill but by a reasonable projection of his efforts into unified action that will make for the benefit of the industry as a whole.

Association Officers and Staff—It is significant and yet logical that you are able to command the services of the men whom you elect as your officers and Executive Committee. As the Executive Committee is now organized, and as the work of the Association has developed, election to the Committee is not mere honor, but rather a strenuous obligation. It is in place for your secretary to emphasize the high character of service which you have received from your elected officers and members of your Executive Committee during the past year. It is not an easy thing for a busy executive to take on the duties imposed by service on the Executive Committee of the Association, yet only as executives of the industry appreciate and respond to the obligation to serve the industry will the Association do the work which you expect of it, and will the industry make reasonable progress.

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the Association to serve during the past year under President Wilson. No executive in the industry who has not been close to Association work can appreciate the time and thought demanded of the President and members of the Executive Committee. The Association and the industry owe a real debt to Mr. Wilson and the other elected officers for the way in which they have given freely of themselves this past year.

What the Association accomplishes for you and for the industry in the years ahead must depend, after all, upon what you wish it to accomplish and what you will give toward accomplishment. Your officers and the staff of the Association can but assist in making the Association what you expect it to be. If you are willing to meet the President and Executive Committee, as well as the Secretary, just a little more than half way in what they are trying to do for you, we are confident that the Association can be made an organization of which you can be proud and an agency of definite assistance to the progress of the industry.

Paul S. Hanway Talks on Statistics

The paper industry of the United States is due to expend something in the neighborhood of $300,000,000 for raw material during the current year. So stated Paul S. Hanway, statistician of the American Paper and Pulp Industry, who was called on for a few remarks following Dr. Baker's report, and who in a brief talk told the Association members what his rather recently-established statistical department of the A. P. and P. A. hoped to do for the individual Association members as well as the industry at large.

Mr. Hanway asserted that a good percentage of this $300,000,000 outlay for raw materials could be saved if paper manufacturers kept a close watch on statistics—not so much in their own industry, but outside of it—and regulated their buying in accordance with the trend of conditions in commodity markets. He cited, for example, jute stock and rosin, and said that papermakers should keep an eye on the consumption of these raw materials in other industries as giving a line on the probable trend of prices, and utilized drawn charts illustrating his points in connection with these two products used by paper mills.

In the absence of Charles A. Gordon, of the Oxford Paper Company, chairman of the Membership Committee, Dr. Baker read his report on behalf of that committee which showed that as a result of a two years' strenuous campaign for new members of the Association 50 new mill members had been secured, 20 during 1925 and 30 during 1926, thus giving the American Paper and Pulp Association a membership representative of 68 per cent of the total pulp and paper production of the United States. A tribute was paid to Mr. Gordon for the excellent work which he and his committee had done in bringing in new members.

Next nominations were in order, and the election of officers for the ensuing year took place. After the casting of the single ballot by the Secretary electing all the officers and Executive Committee members put forward by the Nominating Committee, President Wilson called the President-elect, Mr. Everest, up to the rostrum, and in a few well-chosen words Mr. Everest thanked the members of the Association for the honor of electing him president, declaring that he realized fully the responsibilities he was assuming, and appealing to all in the organization for their individual and collective support and co-operation during his administration.

President Wilson called for a rising vote of confidence in and promise of co-operation for the new administration, and every one in the room promptly responded by standing.

The morning session thereupon was adjourned.

AFTERNOON SITTING

Business Prosperity and the Paper Industry

A highly interesting and instructive address on "General Business Prosperity and the Paper Industry in 1927," was given at the afternoon session of the annual meeting of the American Paper and Pulp Association by John C. Howell, vice president of the Brookmire Economic Service. Mr. Howell painted a word sketch of the prevailing business situation and outlined his views of what is likely to happen during the balance of this year—chiefly from a manufacturing standpoint. He stated frankly that he looked for the tonnage of production in various lines of manufacturing to recede slightly this year, as compared with 1926, but that while he anticipated a slight recession in output he did not by any means look for any depression. The business and financial structure is in a position where there is no reason for any depression, he asserted, but that everyone is proceeding so cautiously that the natural result will be a little decline in tonnage production—in the paper and in various other industries.

C. W. Chabot, chairman of the Distribution Committee of the Association, reported on behalf of his committee, and pointed out numerous ways and methods by which the cost of distribution can be lowered and as discovered through investigation on the part of his committee.

National Stream Purification Committee Report

H. E. Fletcher, chairman of the Committee on National Stream Purification, told of the work of that committee after giving a brief historical synopsis of the committee. Mr. Fletcher's report follows, in full:

For a number of years the industry through the efforts of individual companies has been attacking the problem of the saving of the waste in the mills. It is generally known that there has been and is considerable waste of raw materials in the mills. Both because of a desire to save this waste and because of pressure from the several states in which mills are located to discontinue the discharge of waste into streams and rivers real progress in the solution of the problem has been made.

In 1922, the Technical Association of the Pulp and Paper Industry appointed a committee on waste disposal. This committee has been active in studying the problem of waste in the mills. Finally, at its annual meeting in 1926, the Technical Association passed a resolution calling upon the American Paper and Pulp Association to appoint a national committee to go into this problem aggressively to see if it might not be solved in a way that would mean profit to the mills and satisfaction to the agencies in the various states having to do with the problem of stream purification. The resolution from the Technical Association was presented at the Forty-Ninth annual meeting of this Association, and after discussion, a resolution was passed authorizing the President of the Association to appoint such a committee.

In May, 1926, a committee selected by the Association, was completed, and a meeting called for June 9th at the Union League Club in Chicago. This meeting was very well attended, both by representatives from the mills and from the state health department of a number of the eastern and middle western states. A copy of the minutes of the Chicago meeting is attached hereto as a part of this report.

The outstanding conclusion of the Chicago meeting of the National Stream Purification Committee was that the only way for the industry to attack the problem on the right basis would be the securing of a trained sanitary engineer to begin work upon the more vital phases of the problem in the state or states most concerned.

The summer season slowed up the work of the Committee, but during the first week in October, 1926, a Sub-Committee on Finance met in Chicago and developed a plan for the raising of funds. It was proposed to ask member and nom-member mills alike to contribute to a fund of $15,000 a year for two years; this fund to take care of the salary and travelling expenses of an engineer.

The plan proposed by the Sub-Committee on Finance was presented at meeting of the Executive Committee of the American Paper and Pulp Association held in New York on October 22nd, where it was discussed and authorization given to proceed with the raising of funds.

The Sub-Committee on Finance immediately selected a chairman of each of the states and lists of members and non-member mills were sent to each chairman with the request that he ask the mills to contribute fifty cents per ton of daily production of paper.

The state chairman in Wisconsin, Michigan, Ohio, Pennsylvania and the West Coast have been active and to date approximately one half of the $15,000 set as the goal, has been raised.

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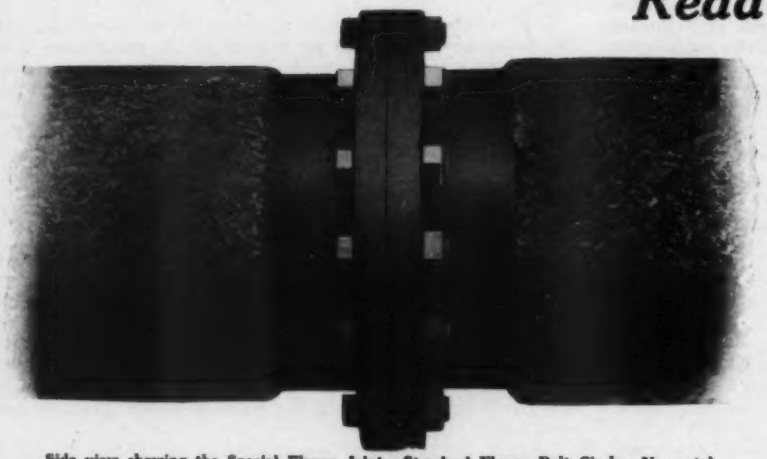

Side view showing the Special Flange Joint. Standard Flange Bolt Circle. No metal touches the stock or liquid conveyed.

ADVANTAGES

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Lasts longer
Saves power
No discoloration
No scale, rust or slime
Easy to install
Light in weight
Acid proof
Neat appearance

SPECIFICATIONS

1½" Thick clear Douglas Fir
Close spiral wrapping No. 6 galvanized steel wire
Outside painted with asphaltum or tar base paint
Cut to length — just advise your measurements face to face or center to center

THE BEVERIDGE PAPER COMPANY
MANUFACTURERS

Indianapolis, Ind. Jan. 24, 1927.

Michigan Pipe Co.
Bay City, Mich.
Gentlemen:

As a user of Michigan Wood Pipe during the last two years we are pleased to cite the many advantages which we have experienced.

At the present time we are equipped with Michigan Wood Pipe at our suction and discharge lines for our machines and also the beater discharge and overflow lines. As fast as our other metal pipe lines need replacement we intend to do so with Michigan Wood Pipe. Our experience with both galvanized and black pipe shows from only three to six months' life which was probably accountable to the severe alum action which we have. While cast iron pipe would overcome this difficulty it is several times more expensive than Michigan Wood Pipe, is clumsy to install and because of the weight requires special supports. Michigan Wood Pipe has all of the advantages of cast iron pipe, is easy to install and because of its light weight requires no special supports, does not corrode, is impervious to alum or acid action. Slime does not stick to it consequently there is less friction to the stock conveyed which means a saving in horsepower.

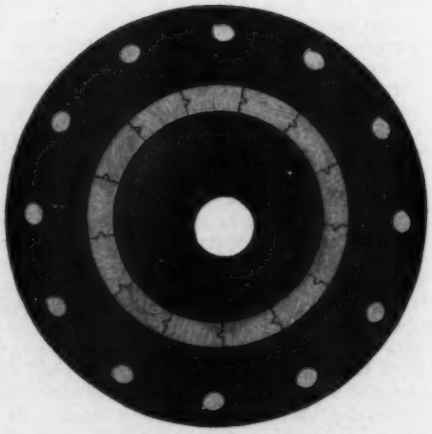
On our stock lines it was necessary to replace wrought iron or galvanized pipe about every three months. Michigan Wood Pipe was installed on this line about fifteen months ago and a recent examination showed the line to be in just as good shape as it was the day of installation.

We consider Michigan Wood Pipe a boon to the paper industry and heartily recommend its use.

Yours very truly,

THE BEVERIDGE PAPER COMPANY.

RWR/EB R. W. Ross, Purchasing Agent.



End view of Special Flange Coupling. Note that the metal is outside.

WRITE FOR CATALOG

MICHIGAN PIPE COMPANY

Dept. 17 **Bay City, Mich.**

has been confronted during the past three months in preparing for the Fiftieth Annual Convention, the campaign for funds has not been pushed as aggressively as it should have been. There are several important states and sections where it has been impossible, as yet, to secure the assistance of men to act as chairman, but immediately following the annual meeting this work will be given prompt attention and there is every reason to believe that the required sum can be secured before the first of May.

The activities of this committee emphasizes the necessity of a reserve fund in the Association of sufficient amount to meet immediately a need of this kind. The industry is being asked to support so many activities that it is difficult to proceed rapidly with the securing of funds for another special activity. The experience of other associations serving industries dependent upon a natural resource has shown the absolute necessity of having the continual service of a trained engineer.

The members of the National Stream Purification Committee and the officers of the Association are confident that a trained engineer of the right type can make himself invaluable to the mills, not only in attacking the problem of saving of waste and stream purification, but in other similar problems.

A good deal of discussion on the subject of stream purification developed following Mr. Fletcher's report, various members arising and asking questions and being replied to by the committee chairman and President Wilson.

RESOLUTIONS

The following resolutions were read and adopted, following which the meeting adjourned:

In Memoriam

Whereas, In the wisdom of Almighty God, leaders of the industry have been taken from among our Councils during the past year,

Be it therefore resolved, that the Association voices its sorrow at their loss, and its appreciation of their constructive work for the industry:

Walter Alexander	Marathon Paper Mills Co.
Winford N. Caldwell	American Writing Paper Co.
Clarence W. Collins	Cherry River Paper Co.
Austin H. Dwight	Hawthorne Paper Co.
Augustus W. Esleeck	Esleeck Paper Co.
Chester Wolcott Lyman	International Paper Co.
Francis N. McCrae	Brompton Pulp & Paper Co.
William Ridgway	National Paper Trade Assn.
Albrecht Pagenstecher and others	Pioneer in pulp and paper industry.

Norman W. Wilson

Whereas, The American Paper and Pulp Association, under the able guidance of its president, executive secretary and other officers, is effectively serving the paper industry of the United States, and

Whereas, This service in no small measure reflects the self-sacrificing leadership and broad, constructive vision of the Association's president,

Be It Therefore Resolved, That the Association in its Fiftieth Annual Convention, hereby expresses its appreciation of the painstaking, untiring and constructive efforts of President Norman W. Wilson and the other officers of the Association in developing an effective instrument for the protection, promotion and perpetuation of the paper industry of the United States.

Canada

Whereas, The Canadian Pulp and Paper Association, at its Fourteenth Annual Meeting in Montreal, Canada, on January 26, 1927, tendered to this Association its felicitations and good wishes for continued co-operation and the progress of the American paper industry, and

Whereas, The American Paper and Pulp Association, meeting at its Fiftieth Anniversary, is deeply appreciative of this cordial expression of friendship and co-operation by the Canadian Association,

Be It Therefore Resolved, That the Association hereby records its appreciation of the goodwill evidenced by the Canadian Pulp and Paper Association and its desire to develop the most complete and harmonious co-operation between the paper associations and industries of the two countries through their Joint International Committee.

Scandinavia

Whereas, The problems of pulp and paper manufacture here and abroad are very similar, and

Whereas, Much is to be gained by frequent personal contacts between the leaders of the industry here and abroad, and

Whereas, During recent years executives of the American industry and officers of the American Paper and Pulp Association have been most cordially received by the Norwegian, Swedish and Finnish pulp and paper associations and their individual mills, and

Whereas, Definite invitation has been received from the Scandinavian associations for informal conferences to be held in Sweden and Finland this coming summer between the executives of the American and Scandinavian pulp and paper industries,

Be It Therefore Resolved, That the Association expresses its appreciation of the friendly relations existing between the industry of this country and that of Sweden, Finland and Norway, and recommends that the invitations from the Scandinavian associations be accepted and a representative delegation of American pulp and paper manufacturers attend such conference as representatives of the American Paper and Pulp Association and the American paper industry, in order to discuss such problems as may be of mutual interest.

Statistics

Whereas, Accurate statistical information is essential to the successful conduct of any business, and

Whereas, The Association, with a trained statistician and the necessary equipment and personnel to collect the general and specific statistics of the pulp and paper industry, is the logical organization to handle such activities as are not already being satisfactorily handled by its affiliated organizations, and

Whereas, There is at present more or less confusion as to terms, classifications, statistical procedure and the value and use of statistics in the paper industry.

Be It Therefore Resolved, That the president of the Association is hereby authorized to arrange for a series of meetings of the statisticians of the industry with a view to determining statistical standards, classifications, definitions and practices applicable to the statistical needs of the pulp and paper industry.

Preparedness

Whereas, The paper industry is one of the major, essential industries of the United States, and

Whereas, The War Department is soliciting the co-operation of industry in the preparation of data which would enable the prompt, complete and economical procurement of necessary materials, equipment and supplies in case of future emergency, and

Whereas, Colonel Philip K. Fletcher, upon appointment by the president of the Association as its liaison officer with the War Department, after careful study of the situation at Washington, has recommended the appointment of a permanent War Service Committee to be composed of men in the industry whose national spirit is larger than their individual mill interests, and who represent various phases of the industry, such as raw materials, productions, distribution, etc.,

Be It Therefore Resolved, That the Association hereby publicly expresses its desire to co-operate with the War Department in compiling the necessary data as to productive capacities, grades, etc., which can be used by the Department in preparing a table of the nation's requirements for pulp and paper for the first twenty-four months of any national emergency, and authorizes the appointment by the president of the Association of a permanent War Service Committee under the leadership of Colonel Fletcher.

Forest Research

Whereas, A bill has recently been introduced in Congress covering appropriations for Forest Research which would develop facts and methods of forest management and economical practices in wood utilization.

The

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Daily Capacity
425 Tons

Newsprint, Catalog
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Butchers Manila
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General Sales Office

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Whereas, It is possible to bring about sustained pulpwood production through practical forest management, and

Be It Therefore Resolved, That this Association urges the passage of this bill in order that effective co-operation between the research agencies of the State and Federal Governments and the wood-using industries may be developed for the prompt solution of problems of fundamental research and forest practice.

Pulpwood Production

Whereas, Four fifths of the productive timberland of the United States is in private ownership, and

Whereas, The wood using industries of the country must depend to a large extent on such private ownership for their raw material, and

Whereas, The actual practice of forestry by private timberland owners, including fire prevention, closer utilization and reforestation, would be of benefit both to the timberland owners, the wood using industries and the public at large,

Be It Therefore Resolved, That the American Paper and Pulp Association endorses the principle of the practice of forestry by the private timberland owner in order to insure continuous forest production and an adequate supply of raw materials for the pulp and paper and other wood using industries.

Vocational Training

Whereas, The American Pulp and Paper Mill Superintendents' Association has been taking a very active part in the development of vocational education, foremanship training and other educational features among the men in the pulp and paper mills of the United States, and

Whereas, The work of getting this type of training before the mill owners and managers has been carried on in several different paper making districts during the past year, and has met with partial success, due to the co-operation of the mills recommending it to their employees, and

Whereas, The American Paper and Pulp Association is heartily in accord with this work.

Be It Therefore Resolved, That the members of the Association make an effort to further this cause of education by giving their moral and financial support to this work as promoted through the Superintendents' Association and other affiliated organizations of the paper industry.

Congratulatory Cables

Apropos of its golden anniversary, the American Paper and Pulp Association received a number of congratulatory cables from paper and pulp associations in Europe.

From Stockholm, Sweden, came the following:

"The Swedish Cellulose Association sends sincere congratulations to the American Paper and Pulp Association on its fiftieth anniversary. We extend our thanks for pleasant and beneficial co-operation, and our heartiest wishes for your continued success and prosperity."

(Signed) "Storjohann, Tham, Lundgren."

President Sandels of the Swedish Paper Mills Association cabled as follows:

"On your fiftieth anniversary please accept our heartiest congratulations and collegial regards."

(Signed) Managing Director Jahn, Swedish Paper Mills Assn.

The secretary of the Central Association of Wood Working Industries of Finland wired from Helsingfors:

"Congratulations on your golden jubilee."

This cable came from the Oslo, Norway, and was signed by H. B. Peterson, president, and E. Jordan, secretary, of the Norwegian paper and pulp association:

"Heartiest congratulations."

The Waldhoff Mills at Mannheim, reputed to be the largest wood pulp mills in Germany, cabled as follows:

"On the occasion of your golden jubilee, our heartiest congratulations and best wishes for the future."

A cable from Commercial Councillor Clemm, the celebrated cellulose chemist and engineer in Berlin, read as follows:

"We send you our most sincere and heartfelt good wishes."

(Signed) "Doctor Offerman."

PRESIDENT'S ANNUAL LUNCHEON

One of the features of the social program at the fiftieth annual convention, was the luncheon given in honor of Norman W. Wilson, president of the association, the luncheon being served between the forenoon and afternoon sessions of the general meeting of the A. P. and P. A. It was a gala event and was attended by an invited list of notables in the paper industry and a few outsiders having some contact with the paper industry. Those present were:

President Norman W. Wilson.

L. R. Wilson, president Canadian Pulp and Paper Association, and of the Abitibi Power and Paper Company, Ltd., Montreal, Can.

Henry W. Stokes, president Wrapping Paper Manufacturers' Service Bureau, and of the York Haven Paper Company, Philadelphia, Pa.

Henry Burn, president Wall Paper Manufacturers of the U. S. A., New York City.

George W. Sisson, Jr., Racquette River Paper Company, Potsdam, N. Y.

Arthur C. Hastings, Cliff Paper Company, Niagara Falls, N. Y.

J. C. Mallalieu, president National Paper Trade Association, and of George W. Millar & Company, Inc., New York City.

L. M. Alexander, Nekoosa-Edwards Paper Company, Port Edwards, Wis.

J. P. Brunt, president Paperboard Industries Association, and of the Container Corporation of America, Chicago.

D. Clark Everest, Marathon Paper Mills, Rothschild, Wis.

G. H. Rady, representing National Association of Waste Material Dealers, Inc., and of the E. J. Keller Company, Inc., New York City.

Raymond Bee, president Cardboard Manufacturers' Association, and of the United Paperboard Company, Inc., New York City.

W. N. Wilkinson, president Supply and Equipment Association of the American Paper Industry, and of the Union Sulphur Company, New York City.

Minor M. Beckett, president Cover Paper Manufacturers' Association, and of the Beckett Paper Company, Hamilton, O.

Arthur Havemeyer, president American Waxed Paper Association, and of the Package Paper Company, Springfield, Mass.

J. H. Kline, president Cost Association of the Paper Industry, and of the York Haven Paper Company, York Haven, Pa.

R. N. Fowler, president Glazed and Fancy Paper Manufacturers' Association, and of the Hampden Glazed Paper and Card Company, Holyoke, Mass.

Dr. Hugh P. Baker, executive secretary American Paper and Pulp Association.

Albert M. Miller, past president National Paper Trade Association, and of the Central Ohio Paper Company, Columbus, O.

Walter J. Raybold, B. D. Rising Paper Company, Housatonic, Mass.

E. F. Eilert, president United Typothetae of America, New York City.

Arthur B. Daniels, L. L. Brown Paper Company, Adams, Mass.

C. A. Crocker, Crocker-McElwain Company, Holyoke, Mass.

L. G. Reineman, president Bureau of Envelope Manufacturers of America, and of the Buffalo Envelope Company, Buffalo, N. Y.

W. W. Sunderland, chairman Executive Committee Writing Tablet Manufacturers' Association, and of the Oxford Miami Paper Company, West Carrollton, O.

Francis H. Evans, president Greeting Card Association, New York City.

Alex G. Gilman, Allied Paper Mills, Kalamazoo, Mich.

J. M. Weaver, president Asbestos Paper Manufacturers' Association, and of the Keasbey and Mattison Company, Ambler, Pa.

W. L. Carter, Nashua Gummed and Coated Paper Company, Nashua, N. H.

R. P. Andrews, president Wholesaler Stationers' Associa-

Briner Economizers
LICENSED UNDER PATENTS OF E A BRINER AND JOHN ALEXANDER
Saving More than Four Million Pounds of Steam Daily!
This tremendous saving is being secured by utilizing waste vapor to heat the machine room air supply—without steam. Besides saving steam the Briner Economizer takes the winter load off your boiler.

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when this advertisement appeared —

This Saving Goes Over 5 Million!

Try to visualize the power in 5 million pounds of steam; stop and consider the daily cost of producing this vast amount of steam; then you will begin to realize the huge saving in dollars that the Briner Economizer adds every day to the profit columns of foresighted paper manufacturers.

Installations Started Operating Since August, 1926

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Manitoba Paper Company, Ltd.
Port Alfred Pulp & Paper Corp., (Machines No. 3 and 4)
Port Alfred Pulp & Paper Corp., (Sulphite Mill)
Powell River Co., Ltd. (Machine No. 2)
St. Maurice Valley Corp. (Belgo Div.)
Wayagamack P. & P. Co., Ltd. (News Mill)

Many Other New Installations Will Soon Be in Operation

The complete list of mills that are sharing in this gigantic saving of steam represent installations in connection with old machines as well as with most of the new machines. Can your mill get the benefit of the saving?

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tion of U. S., and of the R. P. Andrews Paper Company, Washington, D. C.

Z. W. Ranck, president Tissue Paper Manufacturers' Association, and of the Crystal Tissue Company, Middletown, O.

Frank L. Stevens, Stevens & Thompson Paper Company, North Hoosick, N. Y.

Fred J. Rooney, president American Pulp and Paper Mill Superintendents' Association, and of the Upson Company, Lockport, N. Y.

George K. Spence, president Technical Association of the Pulp and Paper Industry, and of the New York & Pennsylvania Company, Johnsonburg, Pa.

George Goodsir, president National Association of Gummed Tape Manufacturers, and of the McLaurin-Jones Company, New York City.

Walter E. Perry, president Salesmen's Association of the Paper Industry, and of the Chemical Paper Manufacturing Company, Holyoke, Mass.

Messrs. Stokes, Sisson, Hastings, Raybold, Daniels and Crocker are former presidents of the American Paper and Pulp Association.

Divisional Meetings

U. S. Pulp Producers' Association

The United States Pulp Producers' Association held its annual meeting in the Waldorf-Astoria Hotel, New York, on February 22, and a good attendance of the membership was present. The discussion involved a number of topics of importance in the domestic wood pulp industry. The annual election resulted in the selection of the following officers:

President, L. M. Alexander, of the Nekoosa-Edwards Paper Company, Port Edwards, Wis., succeeding Herman Elsas, of the Continental Bag and Paper Mills Corporation, New York City.

Vice president, W. H. Savery, of the Shenandoah Pulp Company.

Executive Committee: J. P. Hummel of the Hummel-Ross Fibre Corporation, Hopewell, Va.; Norman W. Wilson, of the Hammermill Paper Company, Erie, Pa., and J. M. Ward, of the Detroit Sulphite Pulp and Paper Company, Detroit, Mich.

Tissue Paper Manufacturers' Association

The Tissue Paper Manufacturers' Association held its annual meeting at the Waldorf-Astoria Hotel, New York, on February 22. All officers were re-elected for the ensuing year. Z. W. Ranch, of the Crystal Paper Company, Middletown, O., was re-elected president; J. M. Conway, of the Hoberg Paper and Fibre Company, Green Bay, Wis., and John M. Rieg, of the Erving Paper Mills, Erving Mass., were re-elected vice presidents, and Emmett Hay Naylor was again chosen secretary and treasurer.

These officers together with E. H. Benson, of the Regal Paper Company, Pulaski, N. Y., and E. J. Kiefer, of the Port Huron Sulphite and Paper Company, Port Huron, Mich., comprise the Executive Committee.

Writing Paper Manufacturers' Association

W. M. Crane, Jr., of Crane & Co., Dalton, Mass., was re-elected president of the Writing Paper Manufacturers' Association at the annual meeting of the organization in the Waldorf-Astoria Hotel, New York, on February 23. The meeting was held in the forenoon in the East Room of the Hotel, and was well attended.

D. K. Brown, of the Neenah Paper Company, Neenah, Wis., was re-elected first vice president, and Fred Leahy, of the Eastern Manufacturing Company, Bangor, Me., was elected second vice president, succeeding A. H. Nevius of the Miami Paper Company, West Carrolltown, O. Emmett Hay Naylor, of 44 Vernon street, Springfield, Mass., where the association's headquarters are located, was again chosen secretary and treasurer.

The Executive Committee for the ensuing year is composed of President Crane, Vice Presidents Brown and Leahy, Col. B. A. Franklin, of the Strathmore Paper Company, Mittineague, Mass.; A. C. Gilbert, of the Gilbert Paper Company Menasha, Wis.; A. R. Smith, of the Keith Paper Company, Turners Falls, Mass., and S. L. Willson, of the American Writing Paper Company, Holyoke, Mass.

Aside from its general meeting, the Writing Paper Manufacturers' Association held meetings during the convention of its Fine Paper Division and Sulphite Bond Division, at which subjects of interest to the respective divisions were discussed.

American Waxed Paper Association

The American Waxed Paper Association held its annual meeting on February 24 in the Waldorf-Astoria Hotel, New York, after having had several preliminary meetings on the two preceding days, and Arthur Havemeyer, of the Package Paper Company, Springfield, Mass., was re-elected president for the ensuing year. Arthur W. Moore, of the Shawmut Waxed Paper Company, Holliston, Mass., was again elected eastern vice president, and C. F. Wright, of the Waterproof Paper and Board Company, Cincinnati, O., was elected western vice president, succeeding R. S. Donnelly, of the Central Waxed Paper Company Chicago.

The foregoing officers, together with the following compose the Executive Committee for the ensuing year: W. L. Carter, of the Nashua Gummed and Coated Paper Company, Nashua, N. H.; J. Kindleberger, of the Kalamazoo Vegetable Parchment Company, Kalamazoo, Mich.; W. J. Eisner, of the Newark Parafine and Parchment Paper Company, Newark, N. J.; George H. Gardner, of the Menasha Printing & Carton Company, Menasha, Wis.; and R. B. Donnelly, of the Central Waxed Paper Company, Chicago, Ill.

Cover Paper Manufacturers' Association

Minor M. Beckett, of the Beckett Paper Company, Hamilton, O., was re-elected president of the Cover Paper Manufacturers' Association at the annual meeting of that organization in the Waldorf-Astoria Hotel, New York, on February 22. The meeting was well attended. Col. B. A. Franklin, of the Strathmore Paper Company, Mittineague, Mass., was re-elected vice president, and Emmett Hay Naylor was again made secretary and treasurer.

The following compose the Executive Committee for the ensuing year: President Beckett, Vice President Franklin, and Willis H. Howes, of Knowlton Bros., Inc., Watertown, N. Y.

Binders' Board Manufacturers' Association

The Binders' Board Manufacturers' Association held a luncheon-meeting on February 24 in the Waldorf-Astoria Hotel, New York, in connection with the annual convention of the American Paper and Pulp Association, and elected the following officers for the ensuing year:

President, Leigh H. Davey, of the Davey Company, Jersey City, N. J. (re-elected).

Vice President, Edward Kerr, Jr.

Treasurer, A. B. Goodrich, of the Riverside Paper Manufacturing Company, Glastonbury, Conn.

Secretary, O. M. Porter, 18 East Forty-first street, New York City.

National Association of Gummed Tape Manufacturers

Irving McHenry, of the Mid-States Gummed Paper Company, Chicago, Ill., was elected president of the National Association of Gummed Tape Manufacturers at the annual session of that body in the Waldorf-Astoria Hotel in New York on February 23. E. C. Smith, of the Nashua Gummed and Coated Paper Company, Nashua, N. H., was elected vice president, and M. C. Warwick was again chosen secretary and treasurer.

The above officers and the following will compose the Executive Committee for the ensuing year; L. A. Bassett, of the McLaurin-Jones Company, Holliston, Mass.; W. K. Gerbrick, of the Central Paper Company, Menasha, Wis., and W. A. Wylde, of the Liberty Paper Company, Bellows Falls, Vt.

Glazed and Fancy Paper Manufacturers' Association

The Glazed and Fancy Paper Manufacturers' Association gave a luncheon at the Canadian Club in the Hotel Belmont on February 23 in New York, following which the annual meeting of the association was held. The election of officers

L. M. ALEXANDER
President and General Manager

C. A. JASPERSON
Secretary

L. E. NASH
Vice President and Manager of Sales

JOHN E. ALEXANDER, *Treasurer and Assistant General Manager*

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MILLS LOCATED AS FOLLOWS

Nekoosa, Wisconsin; Paper, Sulphite and Ground Wood.
Port Edwards, Wisconsin: Paper, Sulphite, Ground Wood and Bleached Pulp.
Wisconsin Rapids, Wisconsin: Hydro-Electric Power and Ground Wood.
Glidden, Wisconsin: Logging, R. R. Ties, Lath Mill, Handle Mill, Etc.

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resulted in the selection of the following to serve for the ensuing year:

President, R. N. Fowler, of the Hampden Glazed Paper and Card Company.

Vice President, A. S. Guggenheim, of the United Manufacturing Company.

Treasurer, John Van Horn, of the Holyoke Card and Paper Company.

Secretary, O. M. Porter, 18 E. 42nd St., New York.

The above officers and the following compose the Executive Committee for the coming year: Jesse Linton, of the Pawtucket Glazed Paper Company; W. G. Snow, of the Middlesex Products Company; I. O. Van Duser, of Louis DeJonge & Company, and C. W. Walther, of Walther & Company, Inc.

Waterproof Wrapping Paper Manufacturers to Organize

A Waterproof Wrapping Paper Manufacturers Organization Committee was formed on February 22 at the convention of the American Paper and Pulp Association in the Waldorf-Astoria Hotel, New York. A. F. Schenkelberger, of the Safepack Mills, Millis, Mass., was chosen chairman of a committee to draft trade customs, articles of association and standardization recommendations. Ten manufacturers participated in this preliminary meeting and arranged to reconvene in Buffalo, N. Y., on March 22, where they expect to complete the organization of the Moisture and Waterproof Wrapping Paper Manufacturers' Association.

Cost Association Holds Open House

THE Cost Association of the Paper Industry held open house during the annual convention of the American Paper and Pulp Association in the Waldorf-Astoria Hotel, New York, and also arranged several sessions at which some interesting addresses were made on subjects relating to costs.

Reed B. Timmers, of Albany, N. Y., delivered an address on "Insurance Information;" D. A. Wilcox, of the Oxford Paper Company, New York, spoke on "Paper Machine Efficiencies;" F. B. Snyder, president of the Brotherhood of Locomotive Engineers Title and Trust Company, Philadelphia, spoke on the subject "Shekels vs. Papyrus;" Professor Thomas H. Sanders of Harvard University, spoke on "The Relation of Cost to Selling Prices;" H. R. Boston, of the Stevens & Thompson Paper Company, North Hoosick, N. Y., spoke on "Our Standard Cost System," and Paul S. Hanway, statistician of the American Paper and Pulp Association, spoke on "The Use of Statistics for Budget Purposes."

Cost Luncheon

A delightful luncheon party was arranged by the secretary for the noon hour on Tuesday. This was attended by Secretary Baker and Major Porter and was held in the State Apartment of the Waldorf-Astoria.

J. H. Kline, of the York Haven Paper Company, who is president of the association, acted as chairman of the luncheon meeting, which was addressed by Freas B. Snyder, formerly president of W. C. Hamilton & Sons, Miquon, Pa., and now president of the Brotherhood of Locomotive Engineers; and Prof. Thomas H. Sanders, of the Graduate School of Business Administration, Harvard University.

Bankers and Papermakers

Mr. Snyder took for his subject "Shekels vs. Papyrus," which he said were the ancient symbols of bankers and papermakers. He acknowledged his obligations for many courtesies received from individual members of the American Paper and Pulp Association during his connection with the industry as a paper manufacturer several years ago. Because of his early connection with paper, bankers with whom he is now associated regarded him as a paper manufacturer who had gone wrong, while paper manufacturers looked upon him as a bank officer. He felt confident accordingly to discuss banks and paper mills.

What Bankers Know About Paper

Mr. Snyder admitted that bankers had scant knowledge of the problems peculiar to the paper industry and would place a wholesale grocer's balance sheet alongside of a paper company's exhibit and discard the latter because of its lack of liquidity. Bankers cannot understand that the same quantity of furnish put to the beaters in different lots, given the same treatment by the same men and run over the same machine in the same way will not always produce the same result. It was beyond their conception that 1,000 lb. of furnish would produce 900 lb. of one grade of paper and 1,100 lb. of another.

Industry Undercapitalized

Bankers knew however that the paper industry was undercapitalized. An industry in which the fixed investment runs as high as $5,000 per man employed, with a necessity of carrying or contracting for raw material almost a year ahead, with a capital turnover of about one and a half times a year should realize that an ample supply of working capital is an absolute necessity.

Evil of Overproduction

Mr. Snyder said that in addition to being undercapitalized the paper industry was overproduced. Every temporary period of increased demand brought more machines into production. A mill creates a specialty and trade flocks to it. With machines running full and more orders coming in, an expansion program is adopted, often without providing capital for any but the fixed assets. Imitations of the specialty crowd the market, the fickle public turns to something new and idle machines result. When an industry has a shortage of working capital and a surplus of productive capacity, with a falling off in demand there comes a scramble for business to keep going and to turn raw material into cash and prices fall like a house of cards.

But expansion goes on and on and brings in its train the third evil, reduced profits. The industry was underpriced. If every mill knew its costs, prices would be based thereon and there would be some return on the investment.

Cost and Selling Prices

Professor Sanders laid down the rule that there should be no selling below cost and no doping of costs to disguise them. He disapproved of price cutting and said that the effort to improve business conditions should be made by establishing better marketing systems and higher qualities of product.

With a view to getting the views of trade secretaries on the relationship between cost and selling prices, Professor Sanders had sent out a questionary. A majority of the replies expressed the belief that costs and market conditions contributed equally to the establishment of selling prices, while eight put market conditions first, and costs second. Some were of opinion that it was the cost of an article alone that governed the selling price principally, and one said that cost alone determines the selling price, but Professor Sanders explained that this response had come from the secretary of the National Association of Casket Manufacturers, but said he did not think this line of business would enjoy any particular rush of orders because of the secretary's view, which brought a laugh from his audience.

Salesmen's Association Annual Meeting

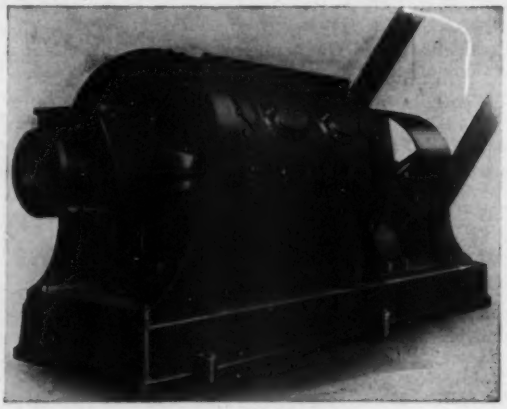
Western Sales Manager Elected President

JAMES H. Coy, of Chicago, sales manager of the Flambeau Paper Company, was unanimously elected president of the Salesmen's Association of the Paper Industry at the eighth annual meeting of the organization held in the East Room of the Waldorf-Astoria Hotel, New York, on Tuesday, February 22. In selecting Mr. Coy, the Salesmen's Association kept up its custom of alternating an eastern president with one from the West, Mr. Coy succeeding Walter E. Perry of the Chemical Paper Mfg. Company, of Holyoke, Mass., who has served two yearly terms as chief executive of the organization. Mr. Coy for the last two years has been vice-president in charge of the Chicago Division of the Salesmen's Association.

Walter J. Cox, manager of the Chicago office of the Paterson Parchment Paper Company, Paterson, N. J., was elected

Jennings Centrifugal Pump

From the above cut one will readily see that this Pump is designed for long life and the utmost efficiency in operation. It is built with its driving motor into a single compact unit with particular attention given to every detail of design and construction to secure uniform and economical performance.

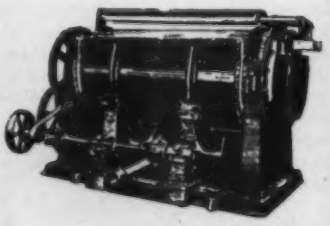


Bird Pulp Screen

The Bird Pulp Screen has become very popular due to its many intrinsically valuable features; among these are the screening of ground wood, kraft or sulphite with about 1 H. P. per ton, this including the elevation of the screened stock to heights of 6′ to 10′ by the screen itself. It will produce a better quality of stock with increased capacity; minimum floor space used with elimination of pumps for circulating screened stock and tailings.

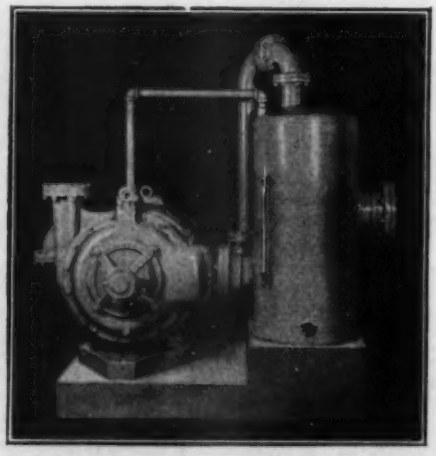
THOMAS H. SAVERY, Jr.

80 East Jackson Blvd. Chicago, Ill.



Bird Inward Flow Rotary Screen

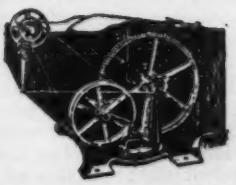
The Bird Screen is not only a very efficient screen in removing dirt from pulp but it has large capacity, requires minimum power, maintenance and attention; is very durable and reliable. This screen insures a uniform flow of well screened stock continually owing to the fact that the cylinder of plates is thoroughly washed at every revolution of the cylinder by means of water from the Bird Shower Pipe which is located within the cylinder.



Jennings Hytor Flat Box Unit

Unequalled by any other apparatus is this superior equipment for use in connection with flat boxes on Fourdrinier Machines, same combining the well-known Nash Hytor Vacuum Pump and a Jennings Centrifugal Pump. Both the air rotor and the centrifugal water impeller are in one casing mounted on the same shaft.

The cut shows the equipment in combination with the necessary separating tank. It can be installed either on machine room floor or below same.



The Bird Save-All

That the Bird Save-All is gaining rapidly in popularity is proved by the numerous repeat orders, some mills using from 1 to 12 or 15 and more. It is automatic in operation; recovered pulp pumped back to chest or system as desired by Centrifugal furnished as part of the equipment; requires minimum power, space, maintenance and upkeep. Some mills are recovering 90% of the valuable materials from white water.

to succeed President Coy as vice-president in charge of the Chicago Division for the ensuing year, while George J. Cadwell, of the American Writing Paper Company, Holyoke, Mass., was re-elected vice-president in charge of the New England Division; Charles W. Nickenig, of the Canadian Export Paper Company, New York, was re-elected vice-president in charge of the New York Division, and Colin Gardner, of the Gardner & Harvey Company, was again chosen vice-president in charge of the Miami Valley Division.

The foregoing officers, together with Robert T. Houk, Jr., of the G. H. Mead Company, Dayton, O.; F. W. Main, of the Worthy Paper Company Associates; J. E. A. Hussey, Boston representative of the International Paper Company, and Dr. Hugh P. Baker, executive secretary-treasurer of the American Paper and Pulp Association (ex-officio) will constitute the Executive Committee of the association for the ensuing year.

R. T. Houk, Jr., was re-elected chairman of the Membership Committee; F. W. Main was again named chairman of the Educational Committee, and J. E. A. Hussey was re-elected chairman of the Social Committee. D. A. Crocker was again chosen secretary and treasurer, and in re-electing him the association went on record as appreciating his earnest efforts since becoming secretary a year ago in directing the work of the organization and particularly in the marked improvement he has made in the secretary's bulletins to members.

Good Attendance at Meeting.

The annual meeting of the salesmen got under way soon after the scheduled time of 10:30 a. m. on February 22. There was a good attendance present; in fact, the fairly spacious East Room of the Waldorf was comfortably filled. President Perry presided.

After calling the meeting to order, the President asked Major Warren B. Bullock, of the Import Committee of the American Paper Industry, to outline the work done by the Import Committee during the past year, which Major Bullock did in a very interesting manner, citing some of the cases which had come before the Committee and the way in which they were handled.

Talk on Advertising and Sales.—J. R. Buckley, of N. W. Ayer & Son, widely known advertising agents of Philadelphia and New York, then gave a highly instructive and interesting talk on advertising. Mr. Buckley made a point of connecting advertising campaigns with the sales departments of industrial and merchandising concerns, and asserted that although advertising had proved it could move goods and move them faster than when they were not advertised that the mere advertising of merchandise would not sell goods to the public—this was the work of the sales department and that unless the salesmen functioned properly the advertising might go for naught. He said that advertising and selling were the all-important factors in business today, that money was no object since the banks are full of it and it is easy to get, and that manufacturing is a comparatively easy science, being more or less exact, but that advertising and selling are the necessary sinews of business at present and that they go hand in hand in the marketing of goods. He pointed out that were it not for advertising the public would be obliged to pay a good deal more for a great many articles, and mentioned our daily newspaper, which, he said, would cost at least 8 to 10 cents per copy instead of 2 to 3 cents if they did not contain advertising. He cited statistics showing that income of newspapers and periodicals in this country last year amounted to only about $398,000,000 for subscriptions whereas their advertising income totaled something like $923,000,000.

Secretary-Treasurer D. A. Crocker reported the association in a healthy financial condition, the expenditures for the past year amounting to but a trifle over the income. A total of 25 new members was admitted to the association during the year; however, there were 31 resignations, thus leaving a net loss of 6 members. Secretary Crocker put the number of members at 168 not including several honorary members, and expressed the opinion that the calibre of the membership at present is higher than at any time since the association was organized in that it is to be expected all of the present members are of the "sticking" type and will remain on the rolls of the organization.

Educating Jobber Salesmen.—President Perry arose to speak on a matter which he had thought of a good deal; namely, the vast field for educational work presented to the members of the Salesmen's Association among the army of dealer salesmen all over the country. He said one of his jobber friends had informed him that he (the jobber) had offered to pay the expenses of any or all of his staff of salesmen who cared to take courses of study on paper so as to fit them to become better salesmen. Mr. Perry emphasized that the association members in their journeys over the country and coming in contact with jobber salesmen could do an untold amount of good to the paper industry at large by making an effort to instruct and educate these local salesmen.

A motion was adopted that resolutions be drawn and forwarded to the family of the late Charles H. Coye, secretary of C. H. Dexter & Sons, Windsor Locks, Conn., and a member of the Salesmen's Association, who died February 12, and all in the room arose for a moment to tender a silent toast to the departed associate.

Division and Committee Reports.—The several vice-presidents in charge of divisions of the association were then called on for reports on the activities of their respective divisions during the year. Mr. Nickenig read a prepared report which covered in full the activities of the New York Division. Mr. Coy told of the great success of the four different golf outings of the Chicago Division last year and gave credit for much of their success to the efforts of Walter J. Cox, chairman of the Golf Committee of the Chicago Division.

R. T. Houk, Jr., chairman of the Membership Committee, stated that the association should aim to increase its members to the number of at least 50 during the coming year. He asserted he was a bit disappointed over the results of the past year although 25 new members had been secured, and expressed the belief that the members were not putting the right kind of spirit or proper amount of pep in their efforts to drum up interest and get new members.

A resolution was adopted authorizing the secretary to send a telegram to Walter J. Cox, who was unable to attend the convention because of an operation for appendicitis in a Chicago hospital, advising him of his election as vice-president in charge of the Chicago Division and telling him the entire membership of the association hoped for his speedy recovery.

Following the election of officers the meeting was adjourned.

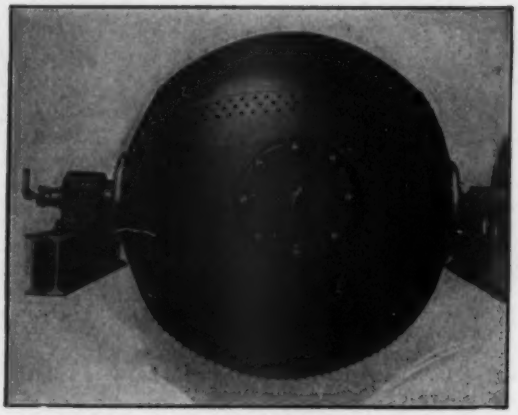
Salesmen's Banquet

The eighth annual banquet of the Salesmen's Association, which was held on Tuesday evening on the roof garden atop the Waldorf-Astoria, was a most enjoyable affair which brought out a good attendance. Walter E. Perry, retiring president of the association, acted as toastmaster. Before introducing the Rev. Horace Percy Silver, D.D., who was the principal speaker of the evening, he announced the receipt of a telegram from J. E. A. Hussey, a member of the executive committee, thanking the officers for gifts of flowers during his illness at home in Boston.

The Reverend Dr. Silver delivered a very impressive homily in sugar-coated fashion, for his speech sparkled with witticisms, though the undertone was one of admonition to avoid the pitfalls of ancient nations through giving way to boastfulness and indulging in luxury. Some of his punning allusions caused laughter, as when he said, "the dark ages were the days of (k)nights"; and of the response the young girl made to the man who said "I could have bought that land for a song." "What was the matter with you, couldn't you sing?" He observed that years ago the ladies used to dress like Mother Hubbard, whereas today they are attired like Mother Hubbard's cupboard.

Doctor Silver did not like the slogan "America First," without the addition of the two words "to serve." One of the mightiest forces that touched human character was business, for if we were all idle we would go to the devil. The only way to develop character was to get out of ourselves and lead in service to others. He appealed to those present to make their country a land of service and so be a benediction to all mankind.

James H. Coy, the newly elected president, was then introduced by Mr. Perry who handed over the gavel to him. Following a brief greeting, dancing was announced and all adjourned to the ballroom.



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"BIGGS" Construction in connection with the manufacture of Globe and Cylinder Rotary Bleaching Boilers, Digesters, etc., is the recognized standard for the paper industry. Years of experience in building this work, plus specially designed shop equipment, makes it possible for Biggs to offer a standardized product.

Many of the Rotaries built by Biggs over a quarter of a century ago are still giving good service today. "Giving" is the word, too, for they have been written off the books years ago.

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Golden Anniversary Dinner

American Paper and Pulp Association Brings Jubilee Celebration to a Close With a Brilliant Banquet

THE annual banquet, or "Golden Anniversary Dinner," of the American Paper and Pulp Association took place at the Waldorf-Astoria Hotel, New York, on Thursday evening, February 24, and was attended by upwards of 1,000 members and guests, who filled the Grand Ball Room and overflowed to the balcony boxes. The president's reception was held in the Astor Gallery where retiring President Norman W. Wilson and President-elect D. Clark Everest received the visitors, assisted by a reception committee headed by W. J. Raybold, and the banquet committee, of which Henry W. Stokes was chairman. An agreeable half hour was spent by the members in meeting old friends and renewing acquaintances before the bugle sounded the call to dinner.

Jubilee Decorations

The banquet hall presented a brilliant appearance, the walls being hung with golden-yellow draperies, festooned with green and golden foliage in full harmony with the celebration of the golden jubilee of the association. The tables were decorated with fresh flowers, yellow and red predominating, and at each plate the guests found a handsome souvenir menu with golden covers, stitched with twisted golden thread. The front page of the cover was embossed in high relief with the Indian head emblem of the association, this surmounting the legend of the book in graceful black script lettering of remarkable artistry.

In addition to the menu and toasts, the book gave a list of the officers and executive committee of the association, together with the personnel of the committee on fiftieth anniversary, the banquet committee and the reception committee. There was also a list of ex-presidents, beginning with William Whiting, of Holyoke, Mass. (1878-1879) and ending with Henry W. Stokes, of Philadelphia (1923-1924).

Souvenir of the Meeting

Each guest was presented with an acceptable souvenir of the meeting which took the shape of a small escutcheon or shield of wood bearing an oxidized silver medallion, with the Indian head emblem of the association standing out in high relief within a circle bearing the name of the association and the dates, 1878-1927. A reduced fac-simile of the first paper mill operated in America at Germantown occupies the upper center of the medallion, with forestry and logging scenes cut into the sides, the picture being completed with a representation of a modern fourdrinier machine extending across the lower part. Intended as a plaque, this shield should form a beautiful and characteristic adornment for any paper or pulp mill office, if it is not kept as a wall decoration for the home study.

"Oscar of the Waldorf"

As the coffee was served, and President Wilson, who acted as toastmaster, was endeavoring to get the attention of the diners in order to start the speechmaking, the audience was surprised by the entrance of waiters carrying on a board, a huge birthday cake at least two feet in diameter in which fifty flaming candles were stuck. The procession was headed by "Oscar of the Waldorf," who made formal presentation of the cake in behalf of the management of the hotel. Oscar was asked to take his place beside Mr. Wilson, who then presented him as a man of international reputation who had been host for the association at its annual dinners for many years.

Oscar Tschirky, to give the well known maitre d'hotel his full name, was cheered loudly as he mounted the dias and proceeded to talk in a reminiscent vein of his early contacts with the association. First of all, he sketched the early history of The Waldorf Hotel, telling of the hard times he and the late George Boldt had when they undertook what was regarded as a fool enterprise in 1893. At the first dinner of the association held at the hotel in 1897, Oscar said that covers were laid for 210. This, he added, was before the Astoria wing had been added and the large ball room in which they were now seated was available. In 1898, when the Astoria annex had been completed, the attendance rose to 350, and the year after that it had grown to 500, while there were about 1,000 at the present jubilee dinner—"which shows," said Oscar, "that you fellows stick together. Keep it up."

"Derb" Felicitated

Another round of cheering ensued, and then Toastmaster Wilson, turning to a figure seated at the extreme left of the speakers' table, announced that Lyman D. Post, publisher of *The Paper Mill*, was also celebrating his fiftieth anniversary. Mr. Wilson asked all present to join with him in congratulating "Derb" and wishing him many happy returns of the day.

Old Friends Missed

Regret was then expressed by Toastmaster Wilson over the unavoidable absence of two old friends of the association, the Rev. Dr. Nehemiah Boynton and Judge Charles F. Moore. Dr. Boynton was prevented from attending by the illness of Mrs. Boynton, and Judge Moore was not strong enough to stand the long railroad journey from his present home in West Virginia.

Relations with Canada

Turning to L. R. Wilson, president of the Canadian Pulp and Paper Association, who sat at his immediate left, Toastmaster Wilson spoke of the friendly relations that existed between the Canadian paper industry and the industry on this side of the line, saying he was delighted to welcome the president of the Canadian Pulp and Paper Association who was also chairman of the Canadian section of the Joint International Committee of the two associations.

Reads Canadian Resolution

The Canadian president was unfortunately suffering from a throat affection which prevented him from speaking, but, as evidence of the amicable relations that existed, the toastmaster read the text of the resolution adopted at the last annual meeting of the Canadian Pulp and Paper Association pertaining to the present anniversary celebration, in which the most cordial felicitations were expressed, as well as the hope that many more years of progress, prosperity and usefulness would follow in the year to come.

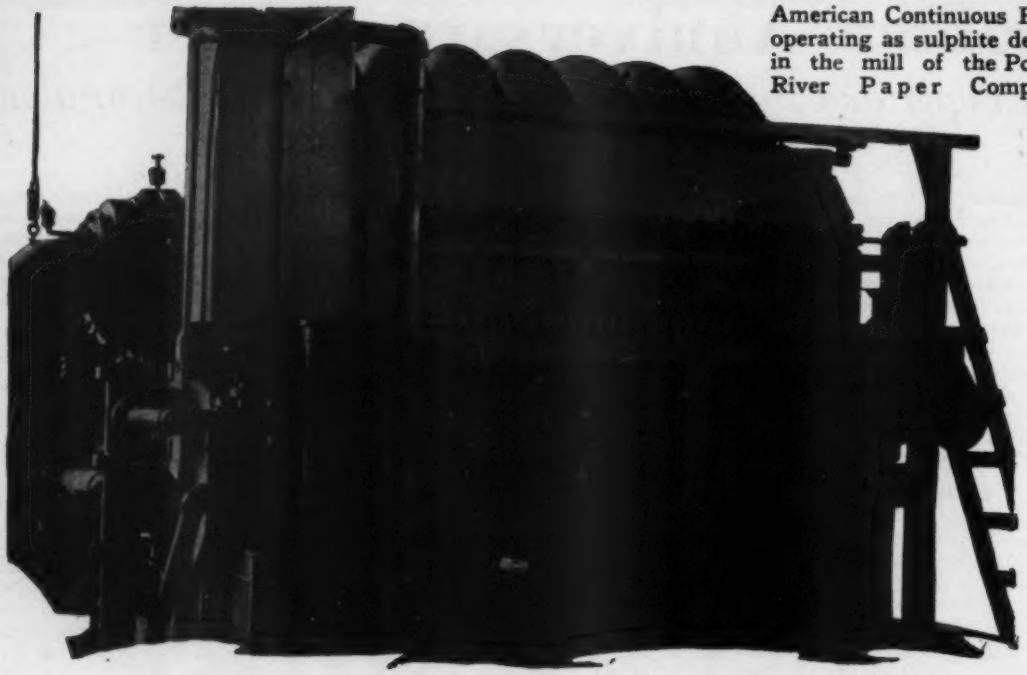
After references to a telegram received from Percy B. Wilson, of the Spanish River Pulp and Paper Mills, and a letter from George D. Knowlton, one of the oldest living manufacturers of paper in the United States, he read a number of congratulatory cablegrams from foreign pulp and paper associations in Germany, Sweden, Norway and Finland. He then introduced Senator Charles L. McNary, chairman of the Senate Committee on Agriculture and Forestry, the principal speaker of the evening, who was cordially welcomed by a friendly audience.

Senator McNary Talks of Research

As the author of the famous McNary-Haugen crop control bill, it was expected that Senator McNary would say something about it, but after touching on scientific advances in forestry and the wood-using industries, in the course of which he made special mention of neutral and alkaline sulphite processes of cooking, and Mason's steam exploding process, as the two greatest advances of the century, he indicated that it might be indelicate to discuss farm legislation with his bill "lying on a desk in the White House."

Senator McNary made other references to research in pulp and paper manufacture, and instanced the appropriation of $10,000 in the Agricultural bill for experimentation in the pulping and converting to white paper of yellow pine in the Southern States.

Elimination of Waste—Of equal importance with other and



American Continuous Filter operating as sulphite decker in the mill of the Powell River Paper Company.

Improve Consistency Control

Filter Area Tells the Story

More than 40,000 sq. ft. of filter area carried by American Filters have already been installed or ordered by paper mills in the United States and Canada.

WIDE variations in feed cause practically no change in the densities of the pulp discharged from American Filters.

That's why these filters have proven so valuable in many mills as aid to better consistency control.

Located in strategic points, they not only recover fibers that otherwise would be lost but help smooth out the flow of stock to the machines.

Take the Powell River installation: one 9′ diameter—8 disc American Filter is used as a sulphite decker and two units of the same size operate as save-alls.

Consistency control in the Powell River mill has been much improved by the American Filter being used as a decker. Stock densities are practically uniform.

Improved consistency control by itself is worth having in any plant. Add to this the saving in fibers and the value of American Filters is more than established.

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more scientific researches conducted by the associations of the industry was, Senator McNary said, the application of research to the elimination of waste, but there was hardly any stage in manufacture of either pulp or paper that had not received some scientific attention. He pointed out that paper was today more completely a woodpulp product than it was even a decade ago and he made a plea for an extension of research to the maintenance and replacement of forests. The time was ripe for the working out of economical solutions of wood problems. Adverting to the system of taxing forest lands, he argued that it would be better to exempt growing forest timber from taxation and impose taxes on the land only.

Praise for Forest Products Laboratory—The work of the Forest Products Laboratory, at Madison, Wis., was commended by the speaker and he mentioned some of the accomplishments of the pulp and paper section of the laboratory, pointing out that the development of a semi-chemical pulping process with the use of a rod mill had now been introduced into commercial practice with fine success. By it, he said, the hardwoods could be pulped into a product for conversion into newsprint and cheap book paper.

Timber as a Crop Plant—Senator McNary gave facts and figures of the appropriations that have been made by the government for the prevention of forest fires and the growth of that service, and in the concluding part of his speech said:

"May there not come a time when farmers will contract with pulp mills to grow pulpwood just as they now contract with canners to grow peas and tomatoes."

Toastmaster Wilson then introduced A. M. Miller, retiring president, and J. C. Mallalieu, the newly elected president of the National Paper Trade Association, at the same time expressing his pleasure at the close co-operation that existed between the merchants' association and the A. P. & P. A. He then called attention to the presence at the speakers' table of former presidents Arthur C. Hastings, A. B. Daniels, Henry W. Stokes, George W. Sisson, Jr., and W. J. Raybold, who each rose in turn and bowed to the gathering.

A Papermaker of the Second Generation

One of the ex-presidents, Toastmaster Wilson said, was a papermaker of the second generation who had been honored by three consecutive terms of office as president of the American Paper and Pulp Association. He called upon George W. Sisson, Jr., to speak on "Our Industry."

"Wedding Anniversary, Not a Birthday"—Mr. Sisson started off by telling the audience that Norman Wilson had it all wrong, "for this is a golden wedding anniversary, not a fiftieth birthday. Fifty years ago a gawky young man, which was the paper industry, led a young and blushing bride, which was the American Paper and Pulp Association, to the altar. Since that time the union has continued and prospered."

Mr. Sisson said it was a far cry from that wedding day to this golden anniversary and there were but few survivors of those who had "stood up" with the young couple and wished them happiness on that day. But there were many present who knew of the struggles of the young people in their early attempts at housekeeping; who watched over them with solicitous care, lent them a helping hand in the old fashioned neighborly spirit, and now are proud and gratified at the fruition of that union.

Mr. Sisson was eloquent and spoke with great oratorical and dramatic ability, making one of the most pleasing and effective speeches of his career.

Fruits of the Union—Mr. Sisson asked what the results of the union had been, and answered the question by stating that through the operations of the association during the past fifty years an industry consciousness had been awakened to opportunity and responsibility. The industry had acquired a national standing and recognition and had become of increasing importance and influence in the industrial life of the nation, with all the social and political implications that accompany it. It was a cohesive industry, enabling its followers to become intelligent and effective collaborators in solving the problems of our State and national life.

Characteristics of the Founders—He touched on the characteristics of the men who built the industry. They were creative Americans with the spirit of the pioneers and naturally great industrialists; men of rugged character who took keen zest in battling with the vast economic problems of a new and undeveloped continent and in the rivalry of vigorous minds dealing with new problems in new ways in a new world. The masterful men who exemplified this transitory stage of the development of our industry were recruited from no special class, but represented the enterprise and genius of the whole people. They were men of vision and careful foresight, men of conviction and courage, as well as of imagination and power. Such men with a faculty for organization and an ability to inspire faith in their undertaking and its success had supplied that vital principle that had given birth, growth and almost miraculous expansion to our industry, an industry that has caught the new American tempo, shown by the acceleration of business during recent years.

Mr. Sisson referred to a clipping from a Glens Falls newspaper of sixty years ago which had been given to him by his father, in which a Doctor Cushing, the proprietor of a small mill in that district, had complained that he was only getting 11 cents a pound for newsprint paper.

A Lesson and a Toast—In closing he asked to be permitted a personal touch and this was that after his twenty-five years of active contact with associated effort, he had been taught the lesson to value loyalty, devotion, unselfishness, broad charity and sincerity, and all these he had found in the men that made up the paper industry. He then asked all to join him in a toast to the memory of those who had passed on and in honor of those still living, whose vision, wisdom and spirit had helped in the upbuilding of the paper industry of the United States.

Looking Forward Fifty Years

Toastmaster Wilson then called upon Walter J. Raybold, president of the Writing Paper Manufacturers' Association, who said he had been given fifteen minutes to tell what would happen to the industry during the next fifty years. After a reference to Edward Bok who was credited with the statement that a man's worst birthday was his fiftieth birthday, and to the latest biography of Benjamin Franklin published under the title "The First Civilized American," Mr. Raybold said there were two ways to judge the future, one by the happenings of the past and the other by the present trend of events.

The Future Market—The first question proposed was: Are we sure of a market for our product? Mr. Raybold said that today the United States was the largest consumer of paper in the world. Fifty years ago, when the population of the country was 50,000,000, the consumption of paper was 18 lb. per capita, while today it is 200 lb. At the present rate of growth the population of the United States in 1997 would be 250,000,000 as compared with the 120,000,000 of the present period. In the same way, at a corresponding rate of consumption, in 1997 the people of the United States would be consuming 1,000 lb. of paper per capita. He reminded his audience that not a single thing had yet been found to take the place of paper.

Can Production Keep Pace?—Question No. 2 was: "Can we produce enough paper to hold this expanding market for paper?" Fifty years ago the production of paper amounted to no more than half a million tons, while today more than 10,000,000 tons of paper are being produced. Fifty years ago the widest machine was only 85 inches, making paper at a speed of 50 ft. a minute, whereas there is talk today of a machine with a face width of 270 inches to run at 1,000 ft. a minute, which would mean a strip of paper 22½ ft. wide and 10 miles long every hour.

Providing Trained Men—Question No. 3 was: "Are we creating trained men for the management and operation of pulp and paper mills to successfully handle the expanding industry? This he answered in the affirmative, saying that the paper industry was paying a higher wage scale than ever before, that fair dealing was the rule between manufacturers and employees and greater attention was being paid to the training of technical men.

Will Raw Material Hold Out?—The next and final question was, "Will our raw material supply hold out?" The outlook was not so certain here, as 95 per cent of the paper made today was of wood. He thought, however, that the wood supply

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GEORGE K. GIBSON, *Sales Manager*, 2319 Tribune Tower, Chicago, Ill.

would last fifty years in view of the development of reforestation methods and the efforts to treat timber tracts as the farmer does his crops. Then there were vast untouched sources of pulpwood in Alaska and Russia to draw upon. He called attention to the fact that only 2.6 per cent of all the wood cut goes into paper. During the next fifty years, it was likely that a fiber could be developed that would be grown as an annual crop.

A Note of Co-operation—Yes, he said, it was possible to judge the future by the present trend. There had been a great rise of the spirit of co-operation during recent years and this was bound to carry us a long way towards the solution of our problems. However, if co-operation were bound up with selfish motives and used for selfenrichment and not for the benefit of the public, failure would result. Paper manufacturers must serve the industry if it is to grow and prosper, and the great problem confronting manufacturers was to get paper into the hands of the consuming public at the lowest practical cost.

As a final touch and in a spirit of fun he said, "We will attend the banquet in 1997."

This brought the big jubilee dinner to a close.

Technical Association's Annual

Series of Meetings in New York Bring Out a Large Attendance and Numerous Papers Are Presented and Discussed

THE twelfth annual meeting of the Technical Association of the Pulp and Paper Industry opened on Tuesday morning at 10 o'clock at the Waldorf-Astoria Hotel, New York City, with the reading of the president's address by George K. Spence, which included the report and recommendations of the executive committee.

President's Address

Gratification was expressed over the growth in corporate membership which now numbers fifty-two. There had also been a satisfactory increase in individual memberships. Members were advised to make use of the system of obtaining information on mill problems by submitting queries to the secretary. More than sixty special inquiries had been answered during the year and transcripts of replies to thirty-seven special inquiries have been published in book form.

President Spence made a plea for increased interest in committee work, saying the success of the association depended upon this.

Change in Committee Name—The title of the Committee on Vocational Training was recommended to be changed to that of Committee on Training Technical Men for the Industry and it was deemed advisable that the committee should study means of bringing about a better understanding between the technical schools and the industry, to the end that students upon graduation would be better fitted for service in the industry. The fitting of men for proficiency as pulp and paper mill executives will also be studied by this committee which will be expected to outline plans for technical men to follow in preparing for executive positions.

Stream Purification—Reference was made to the work of the association in the improvement of the waters of streams in pulp and papermaking states. The American Paper and Pulp Association had appointed a National Stream Purification Committee to consider the subject and the committee is now functioning. President Spence said that a co-operative agreement had been entered into in Pennsylvania by the Sanitary Water Board and twenty-four pulp and paper manufacturing firms, representing upwards of 80 per cent of the total pulp and paper tonnage made in the United States.

Secretary's Report

Secretary W. G. MacNaughton submitted his report for the year. This dealt with an analysis of the membership list, which showed a total of 763 members, represented by 464 active, 157 associates, 90 junior and 52 corporate. There were 125 new members elected in 1926 and 46 resignations. He pointed out that there had been an increase of membership each year since 1921, with the exceptions of 1923 and 1924. Of the total number of members, 515 were directly connected with pulp and paper, the number of firms represented being 244. In industries allied with the paper industry, 248 members were connected with 155 firms. Machinery and supplies accounted for 102 members; chemical and supplies, 59; consulting engineers and chemists, 56, and educational institutions, 17.

Progress in Research—Progress in fundamental and technical research was noted by the secretary. Not only have many paper companies developed research organizations that are beginning to show results, but the governments of several papermaking countries here and abroad are enlarging on the activities of their bureaus. He said that in the United States and Canada, where the Technical Association has closest contact, the Forest Products Laboratories and the U. S. Bureau of Standards were constantly placing the paper industry under an increasing debt of gratitude for able and extremely helpful assistance.

Losses by Death—The report closed with an expression of regret at the loss of two members by death during the year: A. F. Wilcox, manager of the paper mill supply department of U. S. Rubber Company, Chicago; and W. M. Bovard, general superintendent of the Chemical Paper Manufacturing Company, Holyoke, Mass.

Treasury in Sound Condition—As an appendix to the report, he submitted a statement of the financial operations of his office which revealed an extremely satisfactory condition of the treasury, there being a surplus of $3,289.05 of receipts over expenditures for the year and the accumulated funds of the association showed a surplus of $7,931.28.

Reports of Committees

Reports of standing committees were then called for and several chairmen reported. For the Cellulose Committee, W. E. B. Baker announced that a paper would be presented under the auspices of his committee by Prof. George L. Clark, of the Massachusetts Institute of Technology, on "Application of X-Rays to the Pulp and Paper Industry." He explained that Professor Clark was an authority on the subject, being the author of a book entitled **Applied X-Rays**, and had some interesting observations to make concerning the alleged crystalline structure of cellulose.

R. W. Leeper, chairman of the Heat, Light and Power Committee, said that the activities of his committee had been somewhat curtailed during the year but that a paper on "Power Requirements" would be presented by S. A. Staege, another on "Paper Drying" by S. W. Fletcher, and a third on "High-Pressure Steam" by Hosea Webster.

Groundwood Developments

Prof. A. F. Meyer, of the Mechanical Pulp Committee, reported for Chairman Andrews, who was absent. He said that a study had been made of types of freeness testers in use and a paper on the subject would be presented at this meeting. The committee had been encouraged by the increased interest shown by mills in the recovery of groundwood tailings. Groundwood screenings refiners had been studied during the year and a paper would be presented covering the progress made in the different mills. The power-freeness relation of groundwood from individual grinders had received attention and suggestions for controlling the uniformity of stock from individual grinders would be given in a paper to be presented at the sectional meeting.

Artificial Pulpstones—Reference was made to the work done by the Norton Company, of Worcester, Mass., in the

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manufacture of artificial pulpstones. These stones could be made of any desired grit, built to require very little sharpening and need no seasoning. Although the first cost was high, the cost per ton on stones in service up to 523 days was said to compare favorably with quarried stones. Chairman Andrews thought it would be well to give some attention to the subject during the coming year.

Apathy of Coated Paper Men

The report of the Committee on Coated and Processed Paper was passed over, in the absence of Donald V. Lowe, chairman. This report, as sent out by Secretary MacNaughton, indicated a generally apathetic feeling, or lack of interest, on the part of the coating industry to the work which the committee had attempted to do and the chairman recommended the dissolution of the committee, while handing in his own resignation.

Sutermeister's Fiber Stain

B. W. Scribner, chairman of the Committee on Paper Testing, refrained from reading the detailed report of the committee which was already available in printed form, but gave particulars of the subject to be considered at the sectional meeting to be held on Thursday, calling special attention to the demonstration of a stain for the examination of fibers which would be made by Edwin Sutermeister.

New Official Methods of Testing

M. A. Krimmel, chairman of the Committee on Standard Methods of Testing Material, reported that the official methods for testing materials of the association had been put in form and that at the sectional meeting on Thursday afternoon, opportunity would be given to discuss the revised forms. He said that thirty methods would be ready for voting on at the close of the meeting and if approved the association would have official methods for testing alum, bleaching powder, bleaching liquor, casein, caustic soda, clays, paper fillers of the calcium sulphate class, dyestuffs, formaldehyde, gasoline, glue, lime, limestone, rosin, rosin size, sodium silicate, sulphuric acid, sulphur, starch, starch products, converted starches, soda ash, water and coal.

In another report for the Committee on Standard Testing Methods, Mr. Krimmel submitted an outline of policies for the committee which had been laid before the Executive Committee, and assuming that the outline would meet with general approval, the committee had functioned in accordance with it during the past year.

Work on Soda Pulp

W. S. McClellan, chairman of the Soda Pulp Committee, said his report was a record of work accomplished by individuals and he called attention to the papers to be presented at the sectional meeting, which included "Soda Investigation" by Messrs. Cable, McKee and Simmons; "Soda Estimation" by C. K. Textor and W. F. Hoffman; "Drum Filters" by H. A. Morrisson. Messrs. Mayer and Plumstead, of the Sub Committee on Soda Pulp, were called upon to report, but did not respond.

R. H. Stevens, chairman of the Sulphate Pulp Committee, called attention to the reprints of his report which had been passed around and said there would be papers and discussions at the sectional meeting next morning.

Training In and For the Industry

Martin L. Griffin, chairman of the Committee on Training in the Industry, was absent on account of ill health and the report of the committee was read by Secretary MacNaughton. It was stated that in future the committee would be one of training for the industry instead of training in the industry.

T. L. Crossley discussed the report and objected to the change of prepositions. He spoke admiringly of Mr. Griffin's work in teaching classes of papermakers at Holyoke and Fitchburg, Mass., and Canton, N. C.

Is Training too Specialized?—Allen Abrams took part in the discussion. He observed that it had been a criticism of technical men that they received a training that was too much specialized, and our English and Canadian brethren might be right in saying that we did not get the best out of life. In considering the matter of training in the industry, the university men might be urged to give more time to vocational education and the members should ask themselves if they were doing everything possible to further the movement.

Power Classes at Nekoosa-Edwards—E. P. Gleason spoke of the work done in Wisconsin in classes where Vols. I and II of the textbooks had been used where only four out of twenty-five in a class had remained to continue their studies. He urged getting down to brass tacks and pushing the use of the pamphlet form of using Vols. III, IV and V. In the power classes conducted at the Nekoosa-Edwards Paper Company mill, everyone in the mill took part, excepting one individual and he was now selling insurance.

Mr. Crossley suggested that if the system of class work used in a mill was not successful, an investigation ought to be made to determine whether it was the fault of the men or the system.

R. S. Kellogg was called on by President Spence to join in the discussion and he spoke for training in the industry as well as training for the industry. He made a vigorous defense of the textbooks and criticized the disposition of some members to come to meetings and talk about the work of organizing classes without trying to do any real work themselves. He also gave out figures concerning the sale of textbooks, similar to those reported by him at the meeting of the Canadian Technical Section.

Work of the Committee on Waste

George D. Bearce, chairman of the Committee on Waste, gave an account of the work done by his committee during the year. Information had been obtained from 168 mills, including board, news, book, wrapping, and fine papers representing a tonnage of approximately 25 per cent of the total in the United States, as well as information from Canadian news mills. The expenditures for various types of stock-saving equipments by these mills was estimated at $944,700, though the total expenditures for all mills would not reach a figure equal to four times that amount. He detailed the improvements made by mills for the reclamation of fiber and the improvement of watercourses, drawing on figures supplied by C. M. Baker, State sanitary engineer of Wisconsin.

Mr. Bearce said that the general movement in the elimination of waste in the paper industry and resultant purification of streams was working out satisfactorily. Where modern fiber and filler reclaiming equipment had been installed and properly operated, the stream solution problem as far as related to papermaking materials had been virtually eliminated.

This concluded the business of the forenoon sitting.

TUESDAY AFTERNOON SITTING

At the afternoon sitting, which was opened by President Spence at a quarter to 3 o'clock, the secretary announced the presence in the room of two visitors, Nils Frenne and Otto Nordstrom, who were invited to address the meeting. Mr. Frenne excused himself on account of his lack of familiarity with English, but Mr. Nordstrom, who was passing through New York after a visit to Camas, Washington, where he had constructed two of his chip drying systems for the destruction of sulphate odors, made a brief talk. Contrasting Swedish practice with American, he remarked that Americans were able to produce more pulp in a small mill than was the case in Sweden.

Recording Acidity

Dr. Gerald Wendt was then called upon to describe an electrical apparatus for recording acidity which was an improvement over the ordinary electrometric method of determining hydrogen ion concentration, in that a continuous record of changes in the acidity or alkalinity, or what is technically termed pH value, could be indicated automatically on a recording dial, through contact of the solution with a set of electrodes that might be inserted into a vat, or in the stream of a flowing solution. The apparatus could not be demonstrated owing to a lack of batteries or some other equipment of the machine, but Doctor Wendt reviewed the theory and practice of determining hydrogen ion concentration in a way that was readily understood by most of the audience.

On motion of T. J. Keenan, the lecturer was tendered a rising vote of thanks for the admirable manner in which he had presented a most difficult subject.

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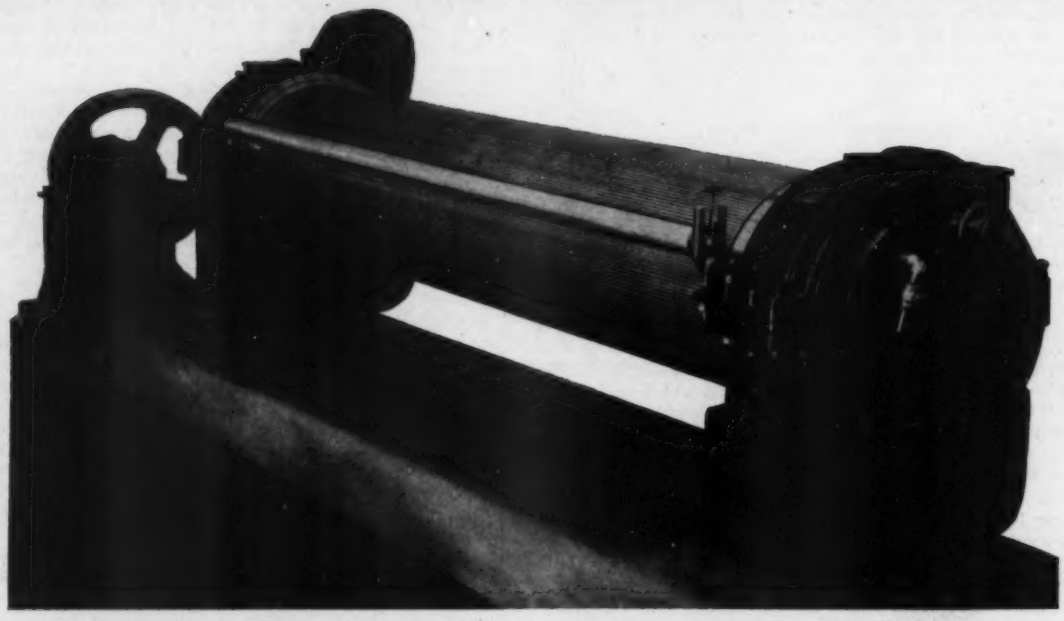

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Practical Research

Arthur B. Green was asked to discuss the technical control of paper stock preparation and reviewed his own work in the study of beating in efforts to determine precise methods of controlling the density of stock in the beating engine. He said it was necessary to know the condition of the stock as a papermaking material before it was dropped to the chest and a way should be found to trace the changes that take place all the time. Mr. Green presented a paper on the subject at the first annual meeting of the association in 1916, which shows his continuing interest in the subject.

Control of density was essential he said to any control of the beating itself. By the use of the Green beater drag, together with means of varying the proportion of water to dry substance and means of regulating the depth of stock in the tub while drag measurements are being made, the density of furnish may be kept within 0.1 per cent absolute, and by preserving this control through to the paper machine the ream weight of the final paper can be determined and maintained from the beater room. It took long study and experiment to develop the principle employed by Mr. Green in his method of controlling density. The importance of keeping accurate records of drag readings throughout the beating period was emphasized.

Research in Young Industries—Mr. Green made the point that there must be more applied research in the paper industry. He contrasted the research work of the General Electric Company and the American Telegraph Company, as well as the DuPont plants, with the character and quantity of research work conducted by the paper industry, an industry that had all the advantage on its side with respect to age, but which had not exhibited the type of forward movement that characterizes the younger industries mentioned. He instanced the enterprise of the General Motors Research Corporation which is affiliated to, and under the control of, a group of industries contributing to the making of motor cars and trucks. Under its leadership, new materials had been developed, improved methods perfected and design of internal combustion motors carried to a point well in advance of present practice.

What the Paper Industry Might Do—Mr. Green said that there was probably no single company among papermakers that would be justified in supporting a research program similar to that of the General Electric Company or the others which he named. But he expressed the hope that some of the firms engaged in our great paper industry would co-operate with each other as shareholders in a corporation dedicated to research and to the application of the results in the constituent mills. To promote such a plan might be a stimulating mission for the Technical Association of the Pulp and Paper Industry. He was sure that the paper industry would respond in a handsome measure to a well led plan.

Discussion of Freeness Control

Frank M. Williams, of Watertown, N. Y., discussed freeness control in connection with some of Mr. Green's observations on stock density. He said he would attempt to give "the real low-down on freeness control."

Freeness of pulp or paper stock was defined by Mr. Williams as the rate of drainage of water from the fibers through a screen, such as the wire of a paper machine. He described the types of instruments for measuring this rate of drainage, which he divided into two classes—those depending upon the measurement of the water delivered in a given length of time as measured by a stop watch, and those depending upon the measurement of water delivered during a limited period of flow, beginning at the instant that the drainage starts and continuing until the rate of flow has become so reduced that a small opening is adequate to carry it away, at which time water ceases to flow into the measuring cylinder—the end point of the test. He said the latter type was preferable to the one employing a stop watch, especially in the hands of operators not technically trained.

Mr. Williams quoted from an article by D. S. Davis on "The Freeness of Sulphite Pulp," published in *Industrial and Engineering Chemistry*, for June, 1926, and exhibited a model of his own apparatus. The method of procedure recommended by Mr. Davis is as follows:

Procedure—Sufficient stock of somewhat more than 24 grams bone-dry weight is made up to 6 liters. This is agitated in a pail with a motor-driven stirrer and 500 c.c. of the stock are brought to the bone-dry condition in the centrifuge with the aid of the heating coil. The bone-dry lap is removed, weighed rapidly, reheated, reweighed. The amount of water to add to the remaining 5.5 liters to give a consistency of 0.4 per cent on the bone-dry basis is then calculated. This is added and the stock is again agitated. One liter, or 0.5 liter, of this stock is poured into the cup, according to whether the higher half-inch orifice is used, or the smaller orifice.

Calibration curves were shown that enabled the operator to convert the readings of the earlier type of instrument into terms of the new model B freeness tester, as made by the Williams Apparatus Company.

Before passing to the next item on the program, Secretary MacNaughton asked Prof. Emil Haueser, formerly of Darmstadt, and now of Hawkesbury, Ont., to address the meeting. Doctor Haueser acknowledged the warmth of the reception accorded him, but asked to be excused from making an extended address on account of his inability to converse freely in English.

What Drum Filters Will Do

President Spence then called on H. A. Morrison, of the Oliver Filter Company, to describe some of the uses of the drum filter in the washing and rewashing of stock. He said that a vacuum drum filter was characterized by high capacity in both liquids and solids, was capable of removing soluble impurities from pulp, giving a high density of discharged stock, and a definite separation of solids from the liquid containing it. He instanced the various uses of drum filters in the washing of brown stock as rewashers and deckers, as well as bleach washers. Used as a decker, a clean filtrate is obtained, averaging less than 1 lb. of stock per 1,000 gal. when handling news groundwood and less than 0.1 lb. stock per 1,000 gal. on sulphite. A vacuum drum filter combines in one step deckering, washing, thickening, and white water recovery.

Mr. Morrison said he knew of no other class of pulp and paper mill equipment which possessed the versatility of an Oliver drum filter. Although less than ten years have elapsed since their introduction, their ability to simplify the flow sheet and to do several useful things at one and the same time account for their popularity.

SECTIONAL MEETINGS

Except for a general session on the afternoon of Wednesday, most of the time was occupied in sectional meetings held in various rooms in the Waldorf-Astoria. Thus on Wednesday morning, the Heat, Light and Power Committee under the direction of R. W. Leeper, chairman, convened in the Myrtle Room, where papers were read on Power Requirements of Paper Mill Machinery by S. A. Staege and C. U. Smith, Mr. Staege presenting the paper. Both authors are connected with the engineering department of the Westinghouse Electric and Manufacturing Company.

Ventilation With a Yankee Machine

At the same sectional meeting S. W. Fletcher, of the J. O. Ross Engineering Corporation, discussed the advances made in the proper use of air in connection with the Yankee machines. With a hood arrangement and the installation of a Briner economizer, notable savings in steam were effected and greater all-around efficiency obtained. He described a unique type of piping which had been adopted for a Yankee machine installation. The exhaust from the engine was connected directly to the dryer and the drain from the dryer connected to the heating coils for the air supply. The last mentioned was dripped to a trap which took care of the condensate from the dryer, leaving the "flash" steam for the heating coils. The drying was controlled by one valve placed in the line between dryer and heater. However, there were so many benefits derived from the complete installation as to make it difficult to separate the results obtained from any particular part of the equipment.

Sulphate Pulp Problems

In Room 110, R. H. Stevens held forth as chairman of the Sulphate Pulp Committee and conducted a most interesting

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discussion of process control. The use of drum filters in the removal of black liquor from kraft pulp as a substitute for wash pans or diffusers was touched upon by him. The removal was said to be quite complete and the operation was one strictly of washing, black liquor being replaced by hot water. In addition to washing acceptably, the drum filter produces a black liquor filtrate of high concentration practically free from fiber.

Overcoming Sulphate Odors

The Committee on Sulphate Pulp had occupied itself during the year with a study of the impurities found in salt cake, with methods of washing sulphate pulp, losses of alkali in recovery and a standard of quality for pulp. The odor nuisance came in for consideration, but nothing definite was proposed. Summer's patent covering the use of phosphoric acid or phosphates, added to the digester, for preventing the formation of methyl mercaptan or other organic sulphur compounds responsible for the odor nuisance, were instanced. Mr. Stevens said he had made an experimental cook using 10 lb. of wood and disodium phosphate equal to 0.5 per cent of the wood as Na_2PO_4, and found that all traces of the disagreeable odor had disappeared. Mention was also made of good results obtained with the Nordstrom drying tower at Camas, Wash., though the committee had not investigated this directly. Mr. Stevens thought it probable that the use of the drying tower would make it impossible to recover by-product turpentine from the digesters. The text of Mr. Stevens's report as chairman is reproduced in full on another page of this magazine, as it contains matter of considerable practical interest to manufacturers of sulphate pulp.

X-Ray Work

In the Cellulose Section under Chairman Baker, the members listened to a most informing account of the application of x-rays in the recognition of the crystalline structure of various substances, including cellulose. The speaker was Prof. G. L. Clark, who gave a fascinating account of what he termed the urge of disorganized material to become organized. Lamp black probably stood at the bottom of the list of disorganized substances and x-ray analysis revealed no crystalline structure, but carbon in the form of graphite, a stage higher in the scale, showed conversion into the crystalline state. Professor Clark described the passage of the x-ray through a fiber of cellulose, which he referred to as four dehydrated glucose residues, meaning $4(C_6H_{10}O_5)$.

As evidence of the crystalline structure of cellulose, he instanced some of its peculiar properties of solubility in combination with sulphocyanic acid. He mentioned that lithium sulphocyanate was a good solvent for cellulose.

In a paper by Dr. Th. Bentzen on the relation between the initial strength of bleached sulphite and the strength properites developed in beating it, he discussed the mercerization test method and agreed with the chief chemist of another mill that "bleached residues left in sulphite pulp will cause a weakening of the fibers upon drying." Doctor Bentzen, who is connected with the Whiting-Plover Paper Company, Stevens Point, Wis., asked the members to let him have information concerning papers that were not up to standard strength if the stuff leaving the headbox contained free chlorine. He also asked them to acquaint him with the proportion of alpha cellulose in the paper from the wire and in the paper leaving the paper machine.

WEDNESDAY AFTERNOON SITTING

Officers Elected

The first business taken up at the afternoon sitting on Wednesday was the report of the nominating committee and election of officers. L. J. Parant and his associates W. L. Nixon and W. W. Cronkhite named E. C. Tucker for president and Philip H. Glatfelter for vice president. M. A. Krimmel was named to succeed Mr. Parant on the executive committee and Emile R. Low was named to succeed W. E. Byron Baker. The nominees were elected by one affirmative ballot, whereupon Allen Abrams proposed a hearty vote of thanks to the retiring officers for their services during the association year.

Aid for Forest Products Laboratory

Arthur B. Green then gave a lengthy abstract of his paper on "The Technical Man's Field," which elicited a good discussion, participated in by J. N. Stephenson, Allen Abrams, E. Parke Cameron, R. N. Miller and D. E. Cable. On motion of Mr. Abrams, following a suggestion by Doctor Cable, a motion was passed that the Technical Association recommend to the American Paper and Pulp Association that a fitting contribution be made for the support of the Forest Products Laboratory, at Madison, Wis., after which W. H. Mason was introduced to present an illustrated account of the manufacture of pulp and board from steam exploded wood.

New Fibermaking Process

The Mason Fibre Company, of Laurel, Miss., of which W. H. Mason is vice president, has adopted the trade name masonite for products made from sawmill wood waste by a process which, through the use of saturated steam at high temperature and pressure, explodes the wood chips and produces a long-fibered pulp encrusted with the original wood lignins. By means of lantern slides, he exhibited details of the Mason fiber gun in which the chips are subjected to a preliminary pressure of 200 lb. for ten to fifteen seconds and then to a pressure of 1,000 lb. for three to five seconds before blowing them from the gun. In this process the lignins are softened without damage to the fiber. A hard board called Presdwood is one of the products to which the exploded pulp seems well adapted. Specimens of this board, insulating board and other boards were passed around among the members.

Details of Operation—In a plant recently completed by the Mason Fibre Company, the sawmill waste is hogged and the resulting chips screened to substantially the same size as the chips used in a soda mill; the chips are fed into the guns, of which there are three, each with a capacity of 200 lb., steam pressure is then applied to the gun, after the charging valve is closed, until the pressure reaches 200 lb. This pressure is held for about fifteen seconds and then the full steam pressure of 1,000 lb. is turned on. In four or five seconds, a discharge valve is opened and the chips forced out, exploding into fiber as they pass the ports at a velocity of 4,000 ft. per second. A cyclone separator receives the fiber, which afterwards drops into a stock chest, and the steam escapes with the atmosphere. Steam for exploding the chips is generated in a 400 h. p. B & W boiler.

Refining the Stock—The fiber in the stock chest is treated with water so that it can be drawn out to a refiner of special construction, similar to a jordan in principle, except that the material enters at the large end and is discharged from the small end. The machine is the invention of John A. Wiener, superintendent of the plant.

Forming the Sheet—After treatment in the Wiener refiners the stock passes to a fourdrinier, 5 ft. wide and 36 ft. long, equipped with three pairs of press rolls. Close to the breast roll is a suction box underneath the wire and a top felt over the sheet. The sheet is formed between the felt and the wire and is about two inches thick, which is reduced to ¾ inch in passing through the press rolls. The press board is then cut automatically into 12-ft. lengths and fed by a tipple feed to the racks. Each rack holds twenty sheets. The racks are on wheels so that they can be pushed to position at one end of a press.

Pressing the Board—Four presses are required to handle the product. Each press contains twenty-one steam-heated platens. The wet sheets are drawn in between the platens on a wire cloth and the press closed. Each press is capable of exerting a pressure of 2,000 tons, being operated by hydraulic rams.

In making insulating board, the sheets are kept in the press for a period of fifty to sixty minutes; with presdwood, the time is about twenty-five minutes.

Presdwood is used for a variety of purposes, such as lining for automobile doors, desk tops, card tables, radio cabinets, wall board and paneling. It comes from the hydraulic press with one side smooth and polished, and can take any finish that can be applied to ordinary wood.

T. A. P. P. I. BANQUET

The twelfth annual dinner of the association took place in the evening at the Hotel Commodore. George K. Spence,

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retiring president, acted as toastmaster and introduced the speakers of the evening, Dr. Gerald Wendt, of Pennsylvania State College, and B. K. Sandwell, of Montreal. Entertainment was furnished during the dinner courses by a young lady violinist, a tenor and a soprano singer, which was greatly enjoyed by an audience that was unstinted in its applause.

College Training

Doctor Wendt was the first speaker. He said he had been greatly impressed by the character of the discussion to which he had listened during the day. There was the subject of training in the industry and training for the industry, as well as research problems, all of which had a special appeal to a university man. He was becoming more and more of the opinion that the colleges were not doing their full duty by the industries. He felt that industrial research should receive more attention, should indeed be the spirit of a college. It would be beneficial to industry if it would let the colleges know more about its problems. He had known men who had flunked at college who had gone into industry and been very successful, for the reason, perhaps, that they had a better opportunity to broaden out and show what was in them than was possible under the conditions that prevail in some of the colleges. One thing he felt sure of was, that it was the growth of industry and the growth of science that was the making of them both.

The First Technical Expert

B. K. Sandwell protested mildly against the title of "Prof." which had been set against his name, saying that while he had occupied a chair in a college some years ago he had ever since been trying to forget it. Referring evidently to Doctor Wendt's observations on technical research, he pointed out that the business of technical research really went back to the Garden of Eden when Adam and Eve founded the Gardeners of Eden, Ltd. Satan came to the meeting disguised as a serpent and tendered his unsolicited advice, so that he was undoubtedly the first technical expert. The practice of technical research was a tradition and its chief contribution to the human race had been in discovering means by which more of us could live in a given area. As his own contribution to the evening's entertainment and instruction he advised the reading of a book by H. G. Wells bearing the title *The World and William Clissold.*

THURSDAY'S MEETINGS

A series of sectional meetings took place on Thursday, February 24, all of which were well attended. Papers were presented on such diverse subjects as "Transportation of Pulp Through Pipes," "Pulping Characteristics of Hardwoods," "Groundwood Screenings Refiners," "Strength Testing of Chemical Pulp," "Strength Testing of Pulp," "Freeness Testers," "Groundwood Control," "Comparison of Grinders," "Soda Estimation of Electrical Conductivity," "Pulping Flax Straw," "Bleaching of Woodpulp," "Color Measurement by the Ives Tintometer," and "Water Resistance of Mineral Coated Paper."

Demonstration of Stain

In the Paper Testing Section, of which B. W. Scribner was chairman, E. Sutermeister demonstrated the staining of fibers with a solution which has come to be known as Sutermeister's Stain, though he disclaims being the inventor of it, and avers that he has simply perfected the formula and the method of applying the stain. It is a two-solution stain, Solution A, consisting of 1.3 grams of resublimed iodine and 1.8 grams of potassium iodide dissolved in 100 cubic centigrams of distilled water, and Solution B, consisting of a saturated solution of calcium chloride.

Method of Using—In using this stain, a drop or two of Solution A is applied to the moist fibers on a glass microscope slide. After a minute or two, a clean blotter or piece of bibulous paper is used to remove excess stain and then a drop or two of Solution B is applied. The fibers are then separated or pulled apart and distributed with the aid of microscope needles and placed on a cover glass or thin microscope slide, any excess of Solution B being removed by absorbing it with moist blotting or bibulous paper as before. By this treatment, the various fibers can be readily distinguished, rag turning a brownish red color; sulphite pulp, violet; soda pulp, dark blue, and groundwood, yellow.

Discussion Over Freeness Testers

In the Mechanical Pulp section, presided over by A. F. Meyer, in the absence of C. K. Andrews, papers were read by R. L. Schadt, A. F. Meyer and Allen Abrams. A paper by C. K. Andrews on "Groundwood Screenings," was taken as read, reprints being supplied.

When Allen Abrams presented his paper "Freeness Testers," objection was made to the author's conclusions, in which he recommended the adoption of the Canadian freeness tester as a standard instrument. It was suggested that the various instruments on the market be calibrated to a standard or master instrument.

Resolution Adopted—Mr. Abrams agreed to withdraw his

Picture taken at the annual Tappi banquet, February 23, 1927, at the Commodore Hotel, New York City

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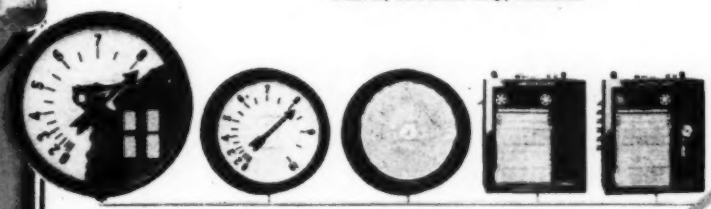

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original recommendation and the following resolution was adopted instead:

"Resolved, that each manufacturer of freeness testing apparatus make a master instrument and lay down standard conditions for operating it, conforming if possible to the Canadian standard temperature and consistency, and that he agree to furnish instruments which are standardized against such a master instrument. At the same time, manufacturers of freeness testers are asked to submit either to the Bureau of Standards or the Forest Products Laboratory their master instruments so that they may be calibrated and freeness figures interchanged, it being understood that they are to bear the expense of calibration."

Water Resistance of Coated Paper

At the sectional meeting of the Committee on Coated and Processed Papers, a discussion took place concerning the cause of smudging in lithographing with coated paper, but nothing of practical value resulted from it.

George K. Hamill, research associate of the Glue Research Corporation at the Bureau of Standards, presented a paper on the subject of water resistance of mineral coated papers, which bore directly on the previous discussion. Some uncertainty existed as to the degree of water resistance needed for lithographing, but it was generally recognized that glazed papers, especially those colored with aniline dyes, should be sufficiently water resistant to prevent smudging or discoloration in the operations of fancy box manufacture. The Bureau of Standards has conducted a number of investigations with a view of improving the water resistance of glue-bound coated papers and Mr. Hamill gave a description of the methods and tabulated the results. The use of formaldehyde resulted in an increase of water resistance and it was shown that the hardening action of formaldehyde on glue is a progressive one. The freshly coated papers may be treated with the formaldehyde or the formaldehyde may be added directly to the coating mixture. The proportion of formaldehyde required to obtain a given degree of water resistance varied with the quality of the glue. Glue-bound mixtures applied at a temperature of about 89° Fahr. may contain from 5 to 8 per cent of formaldehyde based on the weight of glue.

What Is Standard White?

Mr. Bunce, of the Providence Drysalters Company, Providence, R. I., read a paper on Satin White which evoked some discussion. He reviewed the various processes for making satin white, which have varied from time to time, but which is now made by his company as a product of interaction between calcium oxide and aluminum sulphate. The product varies considerably as to properties and color, depending upon the method of manipulation.

The associate editor of THE PAPER INDUSTRY asked Mr. Bunce if he could say positively what was the real composition of satin white but Mr. Bunce was unable to tell. Obviously, if made by the rough and ready process of mixing slaked lime with aluminum sulphate in the ordinary manner, it may consist of a mixture of calcium sulphate and aluminum hydrate, with a considerable proportion of free lime. He said there was evidently a need for a standard method of manufacture.

Before the section adjourned, J. N. Stephenson, editor of the textbooks, made a plea for the assistance of the members in revising the chapter on paper coating in Vol. V, which was in process of being entirely rewritten.

Supply Dealers' Dinner

One of the social events of Paper Convention Week in New York was the nineteenth annual dinner and entertainment of the New York Association of Dealers in Paper Mill Supplies, Inc., which was given on the evening of February 23 in the North Ballroom of the Hotel Astor. This dinner always is arranged for Paper Week so that the supply dealers in the metropolitan area can invite their mill friends in New York for their convention to join in their repasting and merry-making.

All records of attendance were shattered at this year's supply dealers' dinner—there were 300 present, or some 40 more than at any previous similar event. An elegant menu was served, and a vaudeville program which would have done justice to the tip-top variety theatre of the country was rendered by a galaxy of singers, dancers, tricksters and other artists. A souvenir program and menu booklet was distributed which was a bit of a printing gem.

The committee having the dinner in charge was composed of Walter H. Martens, of George W. Millar & Company, Inc., Chairman Charles Parranante, of the Wilson Paper Stock Company, Inc., and Alfred J. Moran, of A. J. Moran & Company.

Woodlands Section Meeting

Suggestions Outlined for Reorganization

A SUGGESTION was made for the reorganization of the Woodlands Section of the American Paper and Pulp Association at the meeting of that body in the Waldorf-Astoria Hotel, New York on February 23. The suggestion, as outlined by Secretary D. A. Crocker, is as follows:

At the time of the Woodlands Section of the American Paper and Pulp Association was organized, the setup of the parent association was not on the same basis as at present, memberships being through affiliated associations instead of direct, as now. This was one of the reasons for organizing the Woodlands Section as a semi-independent body depending upon direct membership dues for its support.

With the change in the organization of the parent association, membership in it automatically included membership in the Woodlands Section, and the Woodlands Section at the same time retained its outside classes of active and associate members, paying dues of $10.00 and $5.00 per annum, respectively.

The Woodlands Section is today a service bureau of the American Paper and Pulp Association, devoted to problems connected with pulpwood supply. The suggestions following are offered for the purpose of bringing the organization of the Woodlands Section into line with its actual status at present.

1—It is proposed that instead of an elected executive committee, the Woodlands Section should be governed by an "Advisory Committee" of eight members, appointed by the president and executive secretary of the American Paper and Pulp Association, representing the following geographical divisions:

New England; New York; Middle Atlantic; South; Ohio and Mississippi Valley; Lake States; Far West; together with the executive secretary of the American Paper and Pulp Association as an ex-officio member.

It is further suggested that one member of this Advisory Committee should be a member of the Executive Committee of the American Paper and Pulp Association. This to provide for continuously close contact between the governing body of the parent association and that of the Woodlands Section.

2—With this change in effect it is suggested that membership in the Woodlands Section be made up of three classes as follows:

(a) Active members—One or more representatives from each member mill of the American Paper and Pulp Association. Every member mill, whether a manufacturer of pulp or not, to have one representative. Additional representatives for mills manufacturing pulp based on the annual pulpwood consumption. The number of such additional representatives to be decided by the Advisory Committee.

(b) Associate members—It seems desirable to continue the opportunity for memberships for those who are interested in the work of the Woodlands Section and who are not eligible through employment by members of the American Paper and Pulp Association. This membership would include foresters, woods managers and others, approved by the secretary and the chairman of the Advisory Committee. The dues of such members to be set by the Advisory Committee.

(c) Complimentary members—It has always been our custom to carry certain outstanding foresters and others as complimentary members. It is suggested that this practice be continued and that such complimentary members be designated by the secretary and the chairman of the Advisory Committee. At the present time the directors of several of the Forest Experiment Stations and other government

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and state foresters from whom we obtain much valuable information are complimentary members.

These suggestions have been submitted to the Executive Committee of the Woodlands Section and have been approved by them in principle. They are presented here for such action as the present membership of the Woodlands Section may desire to take at this annual meeting. D. A. Crocker, Secretary-Forester, Woodlands Section.

Formal Papers

The meeting of the Section was opened with greetings from the chairman, George N. Ostrander, following which Secretary-Treasurer D. A. Crocker read his report.

S. T. Dana, director of the Northeastern Forest Experiment Station, read a paper entitled "Growing Spruce for Pulpwood in the Northeast," in which he stated that the possibilities for the growth of spruce in all types had been shown by investigation to be greater than expected, and that it is comparatively simple to grow spruce in 75 per cent of the cut-over lands in all the Northeast fairly economically.

"The Problem of the Pulpwood Supply in the Lake States," was the subject of a paper by Raphael Zon, director of the Lake States Forest Experiment Station, and E. H. Frothingham, director of the Appalachian Forest Experiment Station spoke on "Pulpwood Possibilities in the Southern Appalachians."

Informal discussion of these papers was indulged in.

The Woodlands Section gave an informal dinner on the evening of February 23 in Room 115 of the Waldorf-Astoria, at which the speaker was Major W. DuB. Brookings, manager of the Natural Resources Production Department of the Chamber of Commerce of the United States.

National Paper Trade Association Holds Annual Convention

New Secretaries Elected to Succeed Late W. C. Ridgway

THE National Paper Trade Association, the organization of paper merchants, held a spirited and largely attended three-day convention in the Waldorf-Astoria Hotel, New York, on February 21-23, inclusive. Paper jobbers from various parts of the country assembled for the convention and some highly constructive work was accomplished at the several sessions.

J. "Cliff" Mallalieu, of George W. Millar & Company, Inc., New York, was elected president of the association, succeeding Albert M. Miller, of the Central Ohio Paper Company, Columbus, O. W. Noble Gillett, of the Chicago Paper Company, Chicago, was re-elected vice president in charge of the Fine Paper Division, and H. W. Mathewson, of the Paper Supply Company, Minneapolis, Minn., was chosen vice president in charge of the Wrapping Paper Division to succeed President Mallalieu. Charles Addoms, of the Miller & Wright Paper Company, New York, was elected treasurer to take the place of Kit S. Warner who resigned after serving as treasurer for a good many years.

The Jobbers had a considerable task on their hands to select a secretary as successor to the late beloved William C. Ridgway, who up to the time of his sudden death two months ago had served the association as secretary since its organization. After due consideration, two secretaries were elected, one to be located in New York and the other in Chicago. A. H. Chamberlain, who for ten years has been executive secretary of the Association of the American Iron, Steel and Heavy Hardware, was named as secretary of the National Paper Trade Association in charge of the Fine Paper Division, with offices in New York City, while N. A. Schoenbucher, who has been connected with the association as chief cost accounting expert, was elected secretary in charge of the Wrapping Paper Division, with offices in Chicago.

The Lawrence Machine Shop in Lawrence, Mass., was entirely destroyed by fire recently together with the destruction of the Emerson Mfg. Co., of that city, totalling a loss of $300,000.

Southeastern Superintendents Meet

National Convention Plans and Valuable Talks Characterize Meeting

G. C. McNAUGHTON, Mead Fibre Company, Kingsport, Tenn., is the new chairman of the Southeastern Division of the American Paper and Pulp Mill Superintendents' Association. Succeeding Carl Magnus, superintendent of the Standard Paper Manufacturing Co., of Richmond, he was elevated to that post at the third annual meeting of the division held in Richmond March 4.

Other officers for the ensuing year were chosen as follows: R. J. Sprang, Champion Fibre Co., Canton, N. C., first vice-chairman; J. K. P. Eckberg, Chesapeake Corp., West Point, Va., second vice-chairman; E. C. Gildenzopf, Congoleum-Nairn Co., Asbestos, Md., third vice-chairman; Lester Crouse, Bennett, Inc., Bogota, N. J., fourth vice-president; Frank E. Winslow, General Electric Co., Philadelphia, fifth vice-chairman, and B. K. Steadman, chemical engineer for Standard Paper Manufacturing Co., Richmond, secretary-treasurer. Time and place of the next meeting is yet to be determined.

National Convention Plans

Mr. Magnus announced that arrangements had been completed for the National Convention to be held at the Jefferson Hotel in Richmond, Va., May 26, 27, 28. Special effort is being made to have the superintendents bring their wives with them. There will be a joint banquet of the men and women May 26, followed by a dance. The main speaker of the evening will be Dr. W. D. Daniel, of Clemson College. On May 27th, there will be separate dinners for men and women. At the men's banquet, the principal speaker will be an English earl reputed to be unexcelled in his special line. The best entertainment features which New York has to offer will supplement the nobleman's talk. At the conclusion of the stag dinner, there will be a special Southern program put on by Doug Leftwich of Waynesboro, Va., to which the ladies will be invited. Mr. Magnus said that he opened negotiations with Will Rogers, hoping to get the humorist on the program, but the negotiations had to be called off when it developed that his price of $2,500 for one evening was out of reach of the entertainment fund.

Open meetings on pertinent topics will be held each morning of the convention. Thursday afternoon, May 26, will be devoted to sectional meetings from the various subdivisions of pulp and paper. Discussion of new mechanical appliances for the pulp and paper industry is set apart for Saturday morning, May 28th. Mr. Magnus will be general chairman of the convention.

Valuable Talks at Meeting

The Southeastern Division started out with thirty-three members. Now it has fifty-two members, Mr. Magnus told the divisional meeting. While this increase is gratifying, he said, it is worth noting that the Superintendents' Association has never made any special effort to secure a large membership. Rather, it has tried to limit its membership to those best qualified in ideals and ability to carry on those things for which the association stands.

Welcome was extended by H. W. Ellerson, president of the Albemarle Paper Manufacturing Co., of Richmond. In the course of his talk, he said: "I don't suppose many mill superintendents will agree with me, but I think that a superintendent should be the "rejector" of his paper mill; that is to say, when paper is not up to standard, and he knows it, he should preferably reject the paper himself, rather than have it shipped out to customers and be rejected at destination. Rejected shipments always mean losses and frequently make dissatisfied customers. The old plan of saying that paper is 'good enough to get by' is a mighty poor plan for the present day. I would rather have a superintendent tell me in the morning that all the paper that was run the night before was bad, and he had turned it down, than to find out a week or two afterward that all of it was not up to standard and had been rejected by customers."

The Government Bureau of Standards at Washington is perhaps better equipped for research work in the paper industry than any other agency, in the opinion of G. K. Hamill,

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chemist for the bureau. In a talk at the morning session, he said that the work could be made of more practical value if the mill superintendents and other practical mill men would evince more interest in it. Suggestions are always welcome, he said, and he urged them to co-operate more fully with the Bureau through the research division of the American Paper and Pulp Mill Association, making just as many suggestions as they pleased.

C. E. Mueller, representative of the Western Paper Makers Chemical Co., gave an illustrated talk on "The Rosin Industry," showing the various processes from the time the tree is tapped until the rosin is converted into the finished product.

Under the old system of tapping trees, he said, they lived only three years. Under the modern system, it is estimated that they will last at least fifty years. The paper industry, he said, is now using a greater quantity of rosin than any other industry. From 50 to 60 per cent of the rosin produced in the United States is obtained from the pine forests of Georgia. At present, upward of 1,700,000 barrels are produced in this country. Approximately 1,000,000 barrels are exported to Europe. Mr. Mueller did not expect the production to increase. In his opinion, it will probably fall to around 1,300,000 or 1,400,000 barrels and remain in the neighborhood of those figures.

Don't beat your stuff too long, was the advice imparted by E. C. Gildenzopf, resident manager of the Congoleum-Nairn Co. However, he stressed the importance of proper beating, saying that paper is made in the beating room. He said that his company uses only rags for raw material and gets all of them from Europe, the principal manufacturing plant being at Marcus Hook, Pa.

James F. Ryland, vice-president and general manager of the Standard Paper Manufacturing Co., Richmond, was switched into the program at the eleventh hour to take the place of a speaker unable to appear who was to make a talk on "Drying Systems." Mr. Ryland shied at that subject, preferring to discuss phases of the business with which he was more familiar. He decried the scramble for production which now characterizes the business and also the great waste of paper in this country. In the United States alone, more than twenty million tons are used every year. This is more than what is consumed in the rest of the world. The United States exports some of its production, but it also imports upward of $125,000,000 worth of paper annually. It is a depleting industry, using up natural resources that cannot be replaced.

One way to check this trend is to cut down on quantity production and make quality the standard turning out the best sheet possible and getting the best price.

Any program of vocational education in any industry must have the active support of the superintendents, B. H. Van Oot, state superintendent of Trade and Industrial Education, declared in his paper on "Vocational Education" which he read before the convention, and which is given in full in another section of this issue.

In a paper on "Suction Rolls," V. S. Denison, representative of the Paper and Textile Machinery Co., of Sandusky, O., said: "I can announce for the first time publicly that we are now drilling all of the larger rolls with a spiral spacing of the holes, which will be superior to anything heretofore used in preventing ridging or unequal wear on the inside of the shell. Patents are applied for on this spiral spacing, and the equipment producing it."

Mr. Denison closed his paper with the statement that any piece of equipment which will help keep the sheet steadily on the machine is indispensable in today's competition for production.

Advantages of copper piping over iron were emphasized by R. A. Burroughs, of R. A. Burroughs and Co., brass and copper goods, Norfolk, Va. Due to its non-corrosive quality, there is an easy flow through copper pipes, and a consequent saving in power, he said. On the other hand, friction in iron pipes not infrequently is almost equal to stoppage. Iron, he estimated, lasts barely five years. Copper lasts at least twenty years, and there can be from 10 to 20 per cent salvage after that period.

The final speaker on the business program was Frank E. Winslow, of the General Electric Company's industrial department in Philadelphia. He outlined developments in the electrical industry, illustrating his talk with lantern slides.

The convention was brought to a close with a banquet at the Richmond hotel at which Ben A. Ruffin, prominent insurance man of Richmond, was the principal speaker.

BRITISH CORRESPONDENCE

Present Trade Conditions

Reports from the manufacturing side of the British paper industry reveal signs of steady progress toward recovery. In spite of a falling off of overseas trade, the home demands for newsprint keep the mills devoted to this particular class of paper fully occupied. British mills, however, are still holding the bulb of the Australian trade, despite the tariff concession given in that country to Canadian newsprint. Coal prices are still responsible for high costs of production, but the prices of fiber materials and chemicals are relatively firm.

The surcharge covering the extra cost of coal is still in operation in the wood-free section. Some mills make a practise of including this in their prices, while others add it as an independent item of cost. Orders are fairly evenly distributed among all the mills; there is less unemployment, and most mills are keeping their machines going on full time.

In the esparto section, the position is fairly satisfactory. There is a steady demand for imitation arts, writings, and printings, and a good market exists for esparto body papers for coatings as art and chromo papers. A certain amount of business has been lost owing to the development of offset printing, but this has been balanced to a large extent by the increased consumption of box enamels, art and matt art printings, and specialties. Although esparto prices are a farthing a pound higher than last year, there seems little prospect at present of a reduction in prices, for transport charges are high, an increase having just been made in railway rates, and signs are not lacking that various factors are at work which will tend to increase the costs of production.

The position of many of the wrapping mills has improved considerably since the imposition of the tariff on foreign wrappings, and the prospects for an economic output seem to be greater. Export figures are kept up in the fine writings section, and although costs of production are high and competition is keen, the prices are unaltered. The larger mills are getting the bulk of the business, and the present tendency towards grouping in the paper industry seems to portend the swallowing up of many of the smaller mills.

New Wrapping Bill.—A bill which was passed through Parliament recently, regulating the sale of food products, stipulating that certain articles must be sold net weight, is expected to affect the paper industry to some extent, owing to new sizes of wrapping, new cartons and containers, and the like that will be needed. Provisions such as bacon, ham, butter, lard, suet, and margarine may now be weighed with the wrapper or container, providing the paper does not exceed two and a half drams for each pound of the article sold, or roughly one per cent of wrapping. It is expected, for this reason, that there will be a demand for greasepaper of a rather thinner substance—about 16-17 lb. per ream, or a reduction in the size of the present sheet. For such goods as rice, oatmeal, tapioca, sugar, raisins, currants, and so on, the limit of weight of paper permitted is 4½ drams per pound, for a parcel not exceeding three pounds in weight, 3½ drams per pound for over three and not exceeding seven pounds in weight, and if over seven pounds in weight, the paper must not be heavier than 3 drams per pound. Thinner bags and paper for grocers will thus become imperative—the type which has been used up to the present—"Sugar Royal" being a heavy nature. It is expected that the thinner varieties will be two shillings per hundredweight more, as a better and stronger quality will be necessary. Some of the mills have already commenced the production of thinner wrappings, although the new regulations do not come into force until July 1st.

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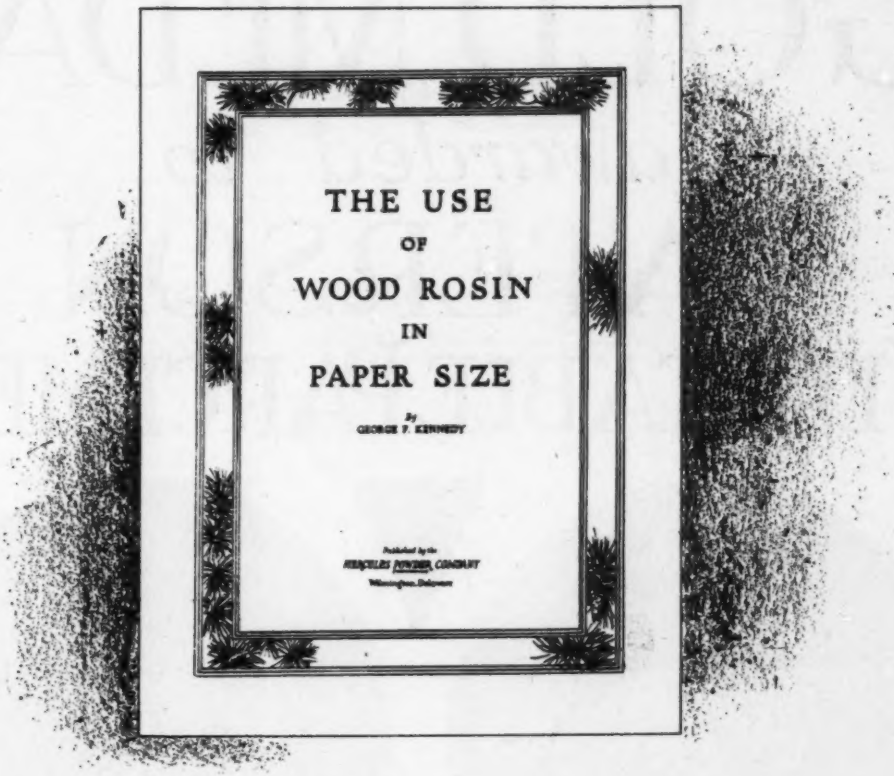

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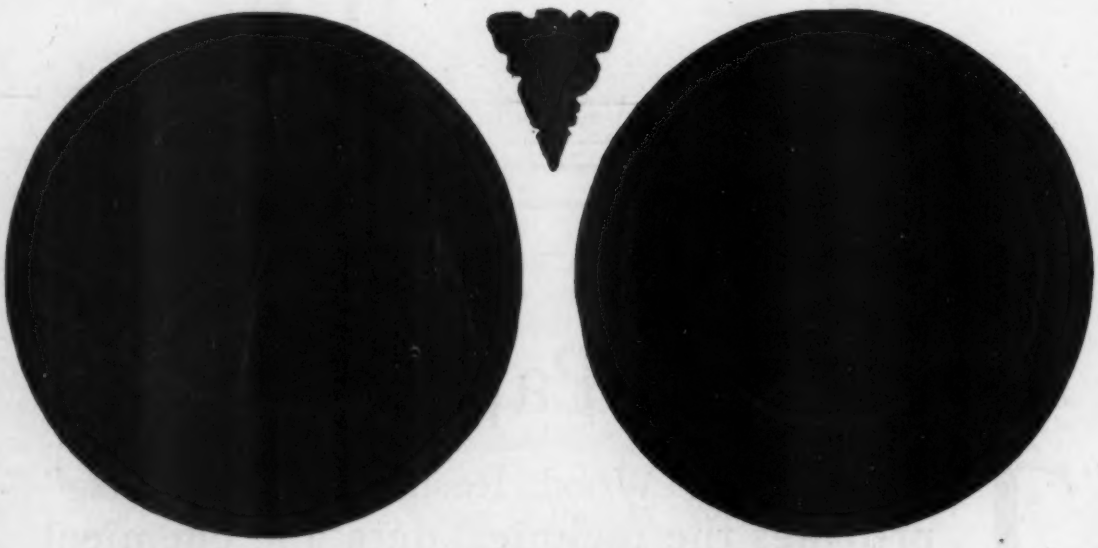

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IN Northern Arizona, a few miles from the city of Prescott, there is a project developing which should mean a lot to the paper industry of the country. In the Camp Verde district, a section of the State made famous by its copper deposits, there lies an enormous deposit of sodium sulphate which is practically unlimited in extent, it having been proven to be as great as 10,000,000 tons, while some estimates make it as great as 90,000,000 tons, the majority of which is above ground. This accessible location enables it to be quarried with a gasoline shovel, and its extent practically assures the paper industry of a practically inexhaustible supply of this essential material for the future. Furthermore, it can be produced easily and without the expense for equipment and processes hitherto inseparable from the production of sodium sulphate in commercial quantities.

In this immense deposit of sodium sulphate, nature has done in advance what men heretofore have been compelled to do by elaborate and costly processes. Here lies immediately at hand a deposit of sodium sulphate, so easily accessible, so readily workable, and so nearly pure that these facts cannot fail to be of great and absorbing interest to the paper industry at least, to say nothing about the same facts having the same meaning for the glass industry and for other industries as well, which, both individually and collectively, require and use immense quantities of Na_2SO_4.

This deposit was opened up a few years ago by the Western Chemicals, Inc., which operated it in an ineffective manner for some time. The equipment installed by the Western Chemicals, Inc., Los Angeles, Cal., was crude and decidedly inefficient, and the company had even less effective merchandising plan. After operating for about a year in a more or less haphazard manner, the company found itself involved in financial difficulties. About this time a new company, headed by R. W. Coad, was formed and was incorporated under the name of the Sodium Products Corporation, with a capital stock of $400,000, and the old company was taken over by the new.

Mr. Coad recognized the almost limitless opportunities presented by the proposition, providing the Camp Verde deposit could be operated scientifically and exploited as it ought to be. Manifestly, the first thing to do was to place the quarry upon a real production basis. Therefore, immediately when he took hold of the company this work was undertaken. The entire plant practically was rebuilt from end to end until, as it stands today, from an uncertain output of from 30 to 40 tons of cake a day with three shifts of men at work, it has a daily capacity of approximately 120 tons with a single 8-hour shift at work.

This was accomplished by speeding up every process from quarrying the cake to putting it into the shipping bins. Much new and improved machinery was required to accomplish this result. The old conveyor belts were replaced by new 18-in. belts; new crushers were installed; the entire system of washing was extended and bettered, and the former insufficient supply of water was overcome by sinking new wells; the entire electric system was overhauled; new roads from the breast of the deposit to the crushers were built, and a better plan of development was decided upon all along the line.

Probably the greatest single improvement in this project of revamping the equipment was in the washing plant. Originally the log washers were installed side by side, permitting but one washing of the cake, but, under the new arrangement, the eight log washers are placed in series, so that the ore is washed six times, thus more effectively removing impurities, resulting in the production on a large scale of sodium sulphate of over 95 per cent purity. These improvements have just been completed.

The Mining Process

So copious is this deposit and so easily is it worked that the processes which prepare it for the market are relatively simple. The deposit is found in a mountain side, and the portion at present exposed shows a breast of from 50 to 70 feet in height and of several hundreds of feet in length. How deeply the deposit extends no one knows, but by means of a shaft that was sunk some time ago it has been proven that it extends at least 80 feet below the present quarry floor. Covering the deposit is an overburden of clay varying in thickness from two to ten feet. This overburden is removed easily by means of a gasoline shovel, after which the cake is drilled and dynamited. The fragments of cake then are loaded into trucks and hauled to a storage bin into which it is dumped.

From this bin the cake feeds into a 30 x 30 Jeffrey roll crusher and thence is carried on a conveyor belt into the middle storage bin. From here the cake goes to a series of eight log washers, each 20 ft. long, in which it is washed six times, removing the clay and other impurities. Then the cake passes over two dewatering screens and into a rotary dryer 50 ft. long, where it is subjected to a temperature of 700 degrees fahrenheit.

After leaving this dryer, the cake feeds through a secondary crusher and emerges in fragments, none of which measures more than one-quarter in. in size. It then is elevated into the mill by a bucket conveyor and is graded by passing over screens of differing mesh. The first grade, consisting of the fragments of one-quarter in. size, is designed for the pulp and paper industry; the second grade, of minus ten mesh, is used in the glass industry, while the third grade, of minus twenty mesh, goes to the manufacturers of stock remedies.

What makes this deposit of sodium sulphate particularly valuable from the production view point is that in its natural state it is anhydrous and free from acid. And, after passing through the various processes described above, it emerges in a state which tests 95 per cent or better of sodium sulphate.

During the time when the deposit was being worked by the Western Chemicals, Inc., the relatively small output was absorbed by two or three pulp and paper mills in Louisiana and by as many glass concerns, but under the new management, with its much larger production, the distribution is to be materially extended in both the paper and the glass industries and also in other industries.

The vision of the company now in control sees in the future an immense development of by-products, all of which commence with the sulphate. These include the sulphide, the carbonates, caustic soda, Glauber salts, and many other prod-

View of sodium sulphate quarry and mill at Camp Verde, Arizona

Specialties

IN A BUSINESS so diversified, it is always difficult to keep the range of our activities before the Trades. For instance, not all of our friends are familiar with our facilities and increasing interest in the manufacture of paper for *special* uses. Among such papers are:

Pure kraft papers for conversion
Semi-kraft papers for conversion
Striped, colored and imprinted papers
Papers for twisting
High grade mill wrappers—natural colors and colored
Supercalendered white and colored papers
Individually striped and imprinted papers for textile wrappers
Unbleached sulphite papers for special uses

Trained papermakers and extensive equipment are available to handle individual problems. Inquiries on special requirements will receive prompt attention.

In addition to these papers, Union products include a complete line of Grocers and Odd Bags, and such Special (made-to-order) Bags as Carton-Liner, Candy, Notion, Bread, Sandwich, Pastry, Cake, Doughnut, Glassine, Potato Chips, Peanut, Bacon and Lard Liner, Nail, Sugar, Banana, Millinery, Shirt, Shirtwaist; Handle, Garment and Cigar and Tobacco Bags; *The* UNION DUPLEX COFFEE BAGS; *The* UNION SHOPPING BAG. Paper Sacks for Flour, Cereals, Meals, Feeds, Coal, Charcoal, Kindling Wood, Garden Truck, Fertilizer, Lime, dry Chemical Products, etc., etc.

The value of a paper bag is measured by the service it renders—not by its COST

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UNION BAG & PAPER CORPORATION

Manufacturers of Pulp, Wrapping Paper, Paper Bags & Paper Sacks

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ucts for which there is a constantly increasing demand. In fact, the future possibilities for this industry are immense and alluring.

Incidentally, the Camp Verde district far in the dim and misty past was the seat of a civilization now vanished. How ancient this was archeologists cannot say, but assert it must have dated back for thousands of years. In this connection, it is interesting to know that the quarrying operations of the Sodium Sulphate Corporation uncover many relics of this immemorial past. These include stone implements and weapons of all kinds, both of the paleolithic age and of the neolithic age, as well as an occasional tomb still occupied by the remains of these prehistoric men. Great interest has been aroused in archeological circles by these discoveries, and they are being studied in especial by scientists connected with the University of Arizona.

OHIO NEWS

New Tablet and Stationery Corporation

Through the efforts of W. W. Sunderland, former president of the Miami Paper Co., West Carrollton, Ohio, there has been effected a merger of a number of the largest tablet and stationery concerns in the country under the name of the Western Tablet & Stationery Corp., with headquarters in Dayton.

It is understood the consolidation involved a consideration of $5,000,000. Mr. Sunderland will serve as president and treasurer and will maintain offices in Dayton.

G. W. Heitz, of Dayton, who like Mr. Sunderland was an officer of the Miami Tablet Co., West Carrollton, will be secretary of the new corporation and will maintain offices in Dayton.

The Miami Tablet Co., the head of which was largely instrumental in effecting the combine, has been in operation in West Carrollton for the past ten years. Up to 1917, it was the stationary department of the Miami Paper Co., which was a successor of the Friend Paper Co. Recently the Miami Paper Co., was taken over by the Oxford Paper Co. Mr. Sunderland has been president of the company for a number of years.

Kenwood Mfg. Co. Closes Out

One of the leading paper box, bucket and oyster pail concerns in the country, the Kinnard Manufacturing Co., of Dayton, has been closed out.

The Kinnard Co., has been in existence for two score years, counting the life of its predecessors, the Crume & Sefton Co.

Some time ago one of the principal men connected with the company left it and started the Edgemont Box Co., Dayton. He secured a contract for the manufacture of cartons for the Edgemont Cracker Co., which always had been held by the Kinnard Co., and this loss of business proved a serious handicap.

Some time ago the stockholders of the Kinnard Manufacturing Co. met in Dayton to consider what action to take, following the filing of a suit for approximately $5,000 by the Beveridge Paper Co, of Indianapolis, when it developed that the firm had been losing money for some time. It then was decided to seek a receivership.

J. F. McCall, night superintendent of the Maxwell Paper Co's. new mills in Franklin, died February 23, after a brief illness from pneumonia. Mr. McCall arrived in the Miami Valley from Niagara Falls, N. Y., only a few days before he was stricken to take up his work as night superintendent in the bond paper mill of Maxwell Howard of Dayton.

Members of the paper trade in the Miami Valley were interested in the re-election of Z. W. Ranck of Middletown, as president of the National Association of Tissue Paper Manufacturers in New York. Mr. Ranck is president of the Crystal Tissue Co., and through his efforts during the past few years, the use of tissues has been extended until now the product of such mills has become practical and covers a wide diversity of uses which were not even considered possible in years past. The number of improvements introduced and the new buildings erected and machines installed at Amanda show to what extent Mr. Ranck is interested in the making of tissue paper. Elaborate plans are in the making for future improvements.

Franklin Lively Center Again

The closing of the Warren National Bank of Franklin without loss to stockholders and depositors reflects a healthy state of business in that paper mill center, which is destined to gain in coming years what it has lost during the past fifteen.

With the completion of the Maxwell Paper Mills, the Philip Carey roofing plant and other enterprises, the town bids fair to become one of the leading paper producers again.

One of the latest firms in Franklin to install improvements is the Cheney Pulp and Paper Co., which is equipping its plant with electric motors and will obtain power from Cincinnati. The company is in the process of laying concrete floors throughout.

The Oxford Miami Paper Co., of West Carrollton is making a number of improvements since it came into the hands of Hugh J. Chisholm. While the complete program of the company on installation of new mill improvements cannot be stated at this time, it is believed they have just started. The first addition is that of a bleaching plant at the south end of the mills which stretch along the Dixie highway, seven miles south of Dayton.

George G. Shaw, president of the Dayton Paper Novelty Co., manufacturers of paper boxes, cartons, oyster pails and similar articles, was elected president of the City Railway Company, in Dayton. Mr. Shaw has been identified with the business interests of Dayton for many years and has devoted virtually all of his time to the manufacture of paper products.

NORTHERN NEW YORK NEWS

New Dam for Union Bag

The Union Bag and Paper Corp. plans extensive alterations in its water power plant near Glens Falls. A dam having a fall of 74 feet and costing approximately $3,000,000 will be constructed, according to word received in Glens Falls from an official of the corporation.

It is proposed that the dam will be built across the Hudson river about 400 feet north of the Fenimore mill of the Union Bag and Paper Corp.

The job will also include the building of a new power house at the Fenimore plant. It is expected that the new plant will develop at least 50,000 horse power. The dam at mill No. 5 of the Union Bag and Paper Corp. will be eliminated. This is the last power site along the Hudson which has not been developed to its fullest capacity.

The Ontario Specialties Co., of Watertown, has received an order from the United States Government for 750,000 ruled paper pads. The pads are for the use of the education department in the Philippine Islands. The company has been supplying pads for the Government for several years, but this is the largest order in its history. The paper is purchased from the St. Regis Paper Co.

John C. Montie of Millinocket, Me., for many years connected with the Great Northern Paper Co., has been appointed assistant general superintendent of the St. Regis Paper Co., in charge of the upper group of mills at Norwood, Norfolk and Raymondville. Mr. Montie will also have charge of the pulp terminal at Waddington and the pulp plant at East Norfolk. The six mills of the St. Regis company are now producing 450 tons of newsprint and catalogue paper daily.

Big Spring Log Drive

River drive and log boom associations of the upper Hudson and Sacandaga rivers at their annual meetings in the offices of Finch, Pruyn and Co., paper makers, decided to make a

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Machine Glazed Tissue · Machine Glazed Wrapping
Glassine & Greaseproof in Bleached & Unbleached Grades

clean sweep of the upper reaches of the two rivers this spring and bring all the timber down to the booms. Owing to the low water, 60,000 logs of the 1925 cut were not delivered last year. This year's drive will consist of the 60,000 old logs and the new logs put in by the Union Bag and Paper Corp.

Among the companies represented in the lists of officers are a number from the Hudson river valley. Elmer E. Smith, dean of the paper making industry in the Adirondacks, was elected secretary and treasurer of three of the four associations. Committees were appointed as follows:

Hudson River Drive Association—John Donohue of North River, representing the Finch, Pruyn and Co.; William O'Brien of Utica, International Paper Co.; W. E. Ramsdell of Hudson Falls, the Griffin Co.; Edward Brooks of Indian Lake, Union Bag and Paper Corp., and Elmer E. Smith, Finch, Pruyn and Co., secretary and treasurer.

Hudson River Boom Association—F. B. Chapman, Glens Falls, Finch, Pruyn and Co.; Thomas Remsden, Hudson Falls, Union Bag and Paper Corp.; William O'Brien, International Paper Co.; Elmer E. Smith, secretary and treasurer, and E. J. Simmons of Glens Falls, assistant secretary and treasurer.

Sacandaga Boom Company—President, George N. Ostrander, Finch, Pruyn and Co.; vice-president, Mr. O'Brien, and secretary and treasurer, Ray F. Fowne of New York, International Paper Co.

The big drive will start between April 1 and April 15.

Campbells to Build Railroad

Drs. James E. and Clarence W. Campbell, owners of the Dexter Sulphite Pulp and Paper Co., have announced that a pulp terminal will be established by their company at Pillar Point on Black River bay.

A standard gauge road, three and a half miles long will be built from the mill at Dexter to the terminal and work will be started in the spring. The project will include the railroad, piers and unloading devices and the cost will be approximately $250,000. The owners expect to purchase a locomotive and about 100 cars. The road will connect with the New York Central at Dexter.

H. E. Harmon, secretary of Knowlton Brothers, Inc., celebrated his 77th birthday recently. He has been connected with Knowlton Bros. 40 years and is at the office every day. George W. Knowlton, 87, president of the company, is spending the winter in Florida.

The natural dam mill of the Oswegatchie Paper Co., was shut down for about two weeks during February on account of a temporary slump in the newsprint market.

William J. White of Potsdam has been granted a patent on a chipper spout for a pulpwood carrier. The patent covers 18 claims for special features.

Stockholders of the Diana Paper Co., whose plant is at Harrisville, elected the following directors: J. H. O'Connell, F. A. Johnson, Sherman Valentine, all of Harrisville; Frank P. Wilder of Syracuse, and J. V. Baron of Watertown. The following officers were elected by the directors: President, Mr. O'Connell; vice-president, Mr. Johnson; secretary, Mr. Wilder; treasurer, Mr. Valentine, and assistant secretary, Ray Hammer of Harrisville.

Taggart Plans New Mill

B. B. Taggart, president of Taggart Brothers Co., testifying before the army board of engineers in connection with the development of Oswego harbor, said that the time would come when the Northern New York paper mills would be forced out of business on account of high freight rates.

He said that it was for this reason he was locating a new mill in Oswego which would make it possible for him to get his supplies of pulp and wood from Canada by boat.

Mr. Taggart said that the St. Regis Paper Co. owned thousands of acres of timber land in Canada and proposed to build a sulphite plant in that country, shipping the pulp to this country by water. He predicted that $1,000,000 a year for five years would be expended in Oswego by interests that he represented. He said that he expected to utilize at least 100,000 tons of water borne commerce a year and plans a large warehouse on the South Atlantic seaboard.

The Algonquin Paper Corp. has elected the following officers: President, Frank Augsbury; vice-president, Clarence S. Cook; secretary and treasurer, William E. Westbrook.

Herbert L. Boyce, a paper mill expert of Wausau, Wis., has been appointed superintendent of the Black River mill of the St. Regis Paper Co. Mr. Boyce succeeds William Argy who resigned to become associated with the Harmon Paper Co., of Brownville. Mr. Boyce is considered an expert in the manufacture of water finish manila and oil papers, both of which are manufactured at Black River.

Carl Martin, secretary and treasurer of the St. Regis Paper Co., is an officer in the New Hampshire-Vermont Lumber Co. This concern was recently organized by the St. Regis Co. and the International Paper Co., to take over 350,000 acres in Vermont, New Hampshire and Quebec, including valuable water power rights. The directorate will include officers of the two paper companies.

The Chemi-Pulp Process, Inc., is the name of a new corporation organized for the purpose of assisting chemical pulp producers in reducing their manufacturing costs. T. L. Dunbar is president; A. D. Merrill vice-president and secretary, and A. F. Richter, treasurer. All are residents of Watertown and are identified with the Stebbins Engineering and Manufacturing Co., and the International Pulp Bleaching Corp., of New York. New operating methods have been perfected, which in actual performance show a substantial reduction of production costs in the chemical pulp field. These methods have been covered by patents which are the property of the Chemi-Pulp Process, Inc., which is establishing branch offices in Montreal and on the Pacific coast.

Paul H. Herwill, formerly president of the Independent Paper Mills of Plattsburg, New York, has severed his connections with this concern.

Kaydeross Paper Co., Inc.

Kaydeross Paper Co., Inc., of Rock City Falls, N. Y., has been incorporated as a New York corporation with an authorized capitalization of $500,000. The new company will operate the Empire Mill at Rock City Falls, N. Y., formerly owned by the Lowe Paper Co., of Ridgefield, N. J., and the Pioneer Mill at West Milton, N. Y. The Lowe Paper Co. holds the controlling interest in the new corporation, which will be managed by Arthur D. Little, Inc., of Cambridge, Mass.

The officers of the Kaydeross Paper Co., Inc., are Herbert G. Lowe, president; Donald V. Lowe, vice-president; C. E. Carpenter, vice-president; Malcolm B. Lowe, secretary and treasurer. Ernest R. Adams, treasurer of Arthur D. Little, Inc., will serve with these officers as director and assistant treasurer. The new company will continue the production of tissue now being made at the Pioneer Mill, and tag and coating board at the Empire Mill. It is intended to develop other specialties and specialty products as occasion warrants.

Production at the Pioneer Mill will shortly be doubled by bringing into operation an additional Harper fourdrinier machine. Improved quality and economy are expected through the installation of electric drives for the paper machines and the completion of a new water power development.

The Black River Paper Co. has leased the main floor of the H. H. Babcock plant in Watertown, giving a floor space of 55x228 feet. The building is equipped with a railroad siding.

The newly organized Carthage Pulp and Board Co., has completed its first year and has a number of uncompleted orders on hand. The company is the outgrowth of the bankruptcy of the Carthage Sulphite Pulp and Paper Co.

Harold C. Derby of Deferiet, N. Y., was badly burned when a stock pipe carrying hot liquid pulp exploded.

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P 27

DOMINION ENGINEERING WORKS LIMITED

MONTREAL · CANADA

Canadian Section

Canadian Magazines Ask Fairer Treatment

Canadian publishers of magazines and business newspapers appeared again before the Advisory Board on Tariff and Taxation last month, and sought relief from "the discriminatory tariffs and taxes" which they claim place an unfair burden on Canadian publishers. They now wish to tax salacious and undesirable literature rather than literary or scientific ones.

It was suggested, on their behalf, that works of fiction should pay a duty of 25 per cent, and that an ad valorem duty of 25 per cent sales tax on imported periodicals, magazines and newspapers, plus the removal of sales tax on Canadian publishers' plant equipment and raw materials would meet their views.

With reference to business newspapers, it was submitted, on behalf of 35 trade and technical publications, that they should be relieved from the "unfair legislative handicaps" under which they are now laboring. These consist of duties ranging from 10 to 12½ per cent on plant equipment, and sales tax, duties on paper, ink engravings, and art work. Chairman Graham promised consideration of the submissions.

Canada Leads in Newsprint Output

The year 1926 definitely gave Canada world leadership in newsprint manufacture and still further accentuated the United States as by far the greatest user of that article. With a total North American production of 3,768,000 tons, Canada furnished 1,882,000 tons, an increase of 24 per cent over 1925, and surpassing by 195,000 tons the output of the United States mills.

But while this was going on, the production of the United States mills was 1,687,000 tons and greater by 156,000 tons, or 10 per cent, than the previous high records of 1925, while there was a gain of 93 per cent in Newfoundland as new operations got into full swing in that country and brought the total up to 186,000 tons. Even the production of 13,000 tons of newsprint in Mexico was 6 per cent over the previous year. The total North American production of newsprint in 1926 was 600,000 tons, or 19 per cent, ahead of 1925, and was made possible by the high operating record of 96 per cent of rated capacity.

Newfoundland Mill Hampered by Floods

Unprecedented floods for this time of the year on the Exploits River at Bishop's Falls, Newfoundland, forced a curtailment of operations at the paper mills at Grand Falls. A portion of the mill buildings was flooded, and for a time it was feared it might be necessary to dynamite part of the mill dams to save a railroad bridge, a $150,000 structure the destruction of which would have cut off all railway communication between eastern and western Newfoundland.

Fortunately the ice jam broke and the water level fell 15 feet in 12 hours, thus obviating the necessity of blowing up the dam. The paper mill was started up again, but as the generators were soaked through it took nearly three weeks before everything was back to normal again.

A. Clarke Hunt, who was elected president of the Canadian Paper Trade Association at the recent convention of this organization in Montreal, is president of Provincial Paper Sales, Limited, Winnipeg. He was formerly associated with the John Martin Paper Company until that organization was taken over by Provincial Paper Sales.

A Correction

In our report of the meeting of the Technical Section of the Canadian Pulp and Paper Association at page 1898 of THE PAPER INDUSTRY for February, 1927, there was inadvertently attributed to Mr. Tatley, of the Laurentide Company, a statement regarding the immiscibility of air with steam which he actually controverted as an erroneous impression held by certain manufacturers of paper dryers. The error of our reporter originated in a confusion of cross-questioning and discussion, and we regret having given a faulty impression of what Mr. Tatley really said. His paper, as remarked by Chairman Keay, constituted a valuable contribution to our knowledge of the distribution of uncondensed gases in paper machine dryers.

The year 1927 has started with a continued increase in Canadian paper exports. According to a report from the Canadian Pulp and Paper Association, exports of pulp and paper from Canada during January were valued at $13,449,017, as compared with a total value of $13,191,885 for January 1926. Wood pulp exports for the month were valued at $3,665,055, and exports of paper at $9,783,962, as against $4,246,730 and $8,945,155, respectively, in January 1926.

QUEBEC

Lake St. John Power and Paper Financing

The Lake St. John Power and Paper Company has issued $5,000,000 first mortgage, sinking fund, 20-year, 6½ per cent bonds, which were offered to the public through the Dominion Securities Corp., at 99.50 and interest. Last July the company started the construction of a 220-ton newsprint mill at Mistassini, on the Mistassini River, in the Lake St. John district, and the plans call for the subsequent extension of the mill to a capacity of 440 tons a day.

The company has leased 1,000 square miles of Crown lands along the upper waters of the Mistassini and its tributaries. These limits, reputed by forestry engineers to be among the finest timber areas in Canada, are estimated to contain 6,000,000 cords of pulpwood, sufficient to supply the requirements of the new mill for over sixty years. The wood is said to be readily accessible and favorably located on the rivers above the mill, so that it can be floated directly to the mill at low cost. Cheap power from the large Duke-Price power developments on the Saguenay has been contracted for, and in addition the paper company has two power sites of its own.

It has contracted with one of the largest and financially strongest publishing interests in the United States for the 10-year sale of the entire capacity output of the news print paper mill now under construction.

Government to Restrict Cutting

Premier Taschereau has announced that the province will regulate the cutting of forests and allow only 80 per cent of the annual increment to be hewn. The wasteful methods of earlier days, which wiped out the white pine and other valuable timbers, will be succeeded by sane conservation based on common sense principles. The policy will be to devote attention to the protection of the forests against fire and to regulate the cut of timber and pulpwood, thus hoping to make the forest perpetual.

This step, in conjunction with the policy of not permitting the establishment of additional mills unless there is an abundance of forest reserve for the mills already in existence or being built, will place the Quebec pulp and paper industry on a firmer and more permanent basis than ever.

At the annual general meeting of Wayagamack Pulp and Paper Co., held in Three-Rivers on February 8th, Norman J. Dawes, G. H. Duggan, Hugh Mackay, K. C., Alexander Mac-

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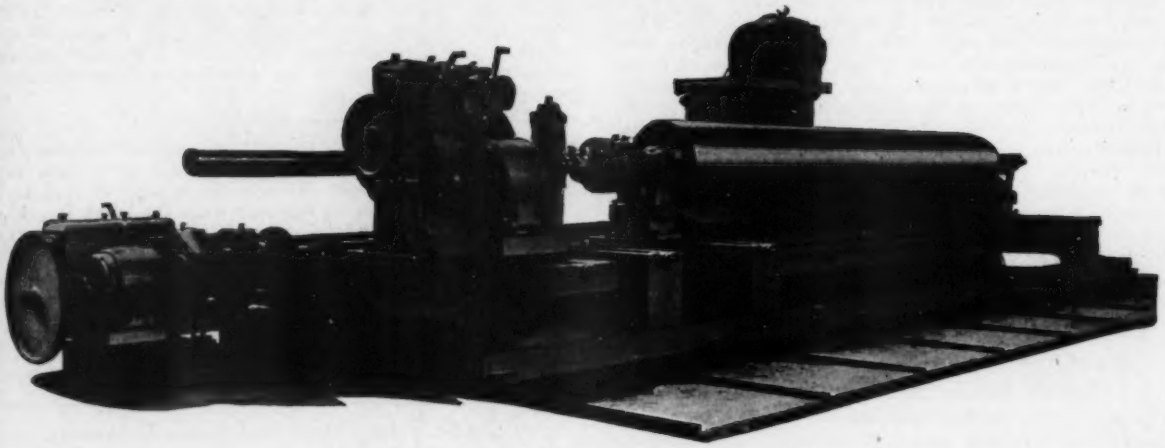

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laren, Jas. W. Pyke, J. Frater Taylor and C. R. Whitehead were elected directors. At the subsequent meeting of the directors, C. R. Whitehead was elected president and Jas. W. Pyke vice-president.

Brompton Withdraws from Canadian Export Paper Co.

At the end of last month's directors' meeting of the Canadian Export Paper Co., president George Chahoon announced that the Brompton Pulp and Paper Co., had withdrawn from the organization for the purpose of setting up its own selling agency, made necessary by the company's increased tonnage and the need of extending its markets.

Mr. Chahoon expressed regret on learning of Brompton's intention, but stated action was logical in view of large expansion in the production of newsprint, which with their wide production of various papers, in Canada and in the United States, had necessitated the development of a sales organization, leading to its decision to market its own production.

Customers heretofore supplied in the United States with paper from the Brompton plants by the Canadian Export Paper Co., would now receive their newsprint from the mills of Price Bros., and Laurentide, which between them have a capacity of over 1,100 tons per day and enjoy the unique advantage of being independent of any surrounding groups or combination of manufacturers. The decision of Brompton Pulp and Paper will therefore benefit Laurentide and Price Brothers by a substantial increase in their contract tonnage.

In connection with Brompton's withdrawal from the Canadian Export Paper Co., a Brompton official stated recently that the entire output of all the company's machines has been sold for the balance of the current year.

Paper Machinery Ltd., the formation of which was announced in these columns last month, has obtained a federal charter with authorized capital of $200,000.

The Ottawa Valley Paper Co., Ltd., of Montreal, has been incorporated at Ottawa, with 50,000, 7 per cent preferred shares at $100 each and 100,000 shares without par value, limited to $5 each.

The Running Streams Commission is being sued for nearly half a million dollars by the Nova Scotia Construction Co., in connection with the construction of a reservoir on Kenogami Lake and the Rivers Chicoutimi and Des Sables. The company claims that a number of changes in the plans and specifications of the undertaking, made at the last moment, made it necessary for it to make considerable changes in its modes of operation and much deeper dredging work was required with some construction of a most dangerous nature being undertaken, making the operations under the new circumstances cost more than had been estimated with the original plans and specifications.

An appreciable improvement in cash position is shown in the 1926 annual financial report of Laurentide Power Co., a subsidiary of Laurentide Co., Ltd. Despite the fact that earnings showed a slight decline as compared with the preceding year, the net working capital position of the company improved to the extent of nearly $200,000.

The completion of the expansion program at the Belgo Division and the absorption of the Canada Paper Co. makes the St. Maurice Valley Corp., the largest newprint producer of the Dominion, with a total rated capacity of 915 tons a day. It will soon drop into second place when the Gatineau mill of Canadian International Paper starts up and hits its pace, bringing the total capacity of the company to 1300 tons a day in its two mills. Moreover, Price Bros., will run St. Maurice Valley Corp., a very close race when its two additional machines are installed in the Riverbend mill, bringing its capacity up to 910 tons.

At the recent annual meeting of the Quebec Forest Industries Association, Ltd., held in Montreal, Brigadier-General J. B. White was re-elected president. Geo. Chahoon, Jr., president of Laurentide Co., was elected first vice-president, and Dan McLachlin, of McLachlin Bros., Arnprior, Ont., was elected second vice-president.

Callard and Co., Ltd., have been incorporated with a capital stock of $100,000 and head office in Montreal, to carry on the business of merchants, manufacturers and dealers in paper of every kind, cardboard, products and manufactures of paper or pulp, strawboard and other preparations.

Canipco Jottings

Gatineau Power Co., Canipco subsidiary, has acquired two new electric power plants at a cost of $350,000, with existing power capacity of 600 and 1,000 horsepower. The Bonhomme electric power plant on the Blanche River, with a present capacity of 600 horsepower, was purchased for $100,000. The Papineauville Electric Company's plant at Papineauville, on the Ottawa River, with a capacity of 1,000 horsepower was purchased for $250,000. By these two purchases the company has acquired important water rights on the Blanche, Ottawa and Nation Rivers.

Cyril Vokey, 24, of Newfoundland, employed on construction work in the Gatineau paper mill, had his right arm amputated below the elbow when a crane passed on a rail over which Vokey had put his arm. The man was on a ladder at some height from the ground when the accident occurred. He made no outcry and walked calmly down, holding the stump of his arm.

John A Murray, formerly with South Glens Falls, N. Y., plant of International Paper, has been transferred to the Gatineau mill of the company, where he has already assumed his new duties.

The way things look now at East Templeton, it is expeeted that the Gatineau mill will be making paper about April 1st.

Officials of International Paper have declared that the recently reported projects of a new rayon pulp mill to be erected by International Paper in the neighborhood of their Gatineau mill are baseless, and also that to their knowledge no such project is being entertained by any of the International Paper shareholders.

Assurance that sufficient electric energy to supply 160,000 horse-power is available to Hull and district for any new industrial concern that may locate there was given recently to a delegation of the Hull Board of Trade by Gordon Gale, general manager of the Gatineau Power Co. Mr. Gale further announced that his company has purchased the plant of the Maniwaki Power and Telephone Co., developing 2,600 horsepower on the Gatineau River above Maniwaki.

The Canadian Celanese Ltd., which started erecting a plant at Drummondville about eight months ago to manufacture cellulose acetate silk, will probably be starting up its knitting and weaving departments some time this month. The spinning department, however, will likely start up only next fall, and in the meantime the yarn will be obtained from the plants of the parent company in England in the United States.

The Chelsea power house of the Gatineau Power Co., is now developing 68,000 horse power, the second 34,000-horse power unit having been started on February 22nd. Most of the energy available so far will be used in the pulp and paper mills at Templeton which are rapidly nearing completion. The starting up of the second unit was carried out in presence of M. F. Malone, technical director of the plant, and H. Mincer, superintendent of the Canadian Westinghouse Co., who directed the installation of the generators, etc. There are three more units to be installed, the plant being designed for a total capacity of 170,000 horsepower.

ONTARIO

Provincial Paper Profits Improved

Net profits of the Provincial Paper Mills, Ltd., for the year ended December 31st, 1926, show a substantial improvement over those of the preceding year. This company has increased its production by building a new plant at Port Arthur. In 1926 the sum of $1,064,407 was spent on extensions to this

The Town Crier of Today

OYEZ! Oyez! Oyez! All men are commanded to give ear, for neither government nor business can continue without a concert of action based upon a mutual understanding.

From medieval times to the present day, the Crier has served to give publicity to proclamations. True enough, he is to be found today only as a relic of court room procedure. But once it was his serious business to let the wide world know that king or council, mayor or merchant had some important news to proclaim to the listening populace.

Now we do it better. We reach the eye rather than the ear. Whether it be a proclamation of thanksgiving or an announcement of wares to vend, the printed sheet, pervasive, persistent and easy to understand, takes the message and spreads it with diligence and certainty. Paper has become the Public Crier.

Hammermill Paper Company

Erie, Pennsylvania

plant, including the installation of a second newsprint machine, which however did not begin producing until 1927.

The new 154-inch Walmsley machine of the Port Arthur Division of the Provincial Paper Mills has begun operation. It will turn out from 50 to 60 tons a day of superior half-tone news.

The Provincial Government is devoting considerable attention to the policy of perpetuating the timber wealth of the province by segregating areas adapted to the natural reproduction of the forests, and legislation has been introduced in that connection.

Hon. W. Finlayson, Minister of Lands and Forests at Toronto, has also intimated that in the near future Ontario's fleet of aeroplanes for forest fire control will be augmented. Government arcraft are to be standardized and increased in number with a view to obtaining the maximum speed and fire-fighting efficiency.

A clear cut victory was won by the Spanish River Pulp and Paper Mills, when the Interstate Commission at Washington, in a six to four decision affirmed on re-consideration the finding in a prior report of the Commission, that joint rates on newsprint paper, in carloads, from Espanola, Ont., to destinations in Wisconsin, Minnesota, Illinois, Missouri and Iowa, and to Omaha, Nebr., are unreasonable and unduly prejudicial to the extent that they exceed by more than four cents per hundred pounds the rates applicable from Sault Ste. Marie, Ont., to the same destinations. The new rates, which were to have become effective August 25, 1926, but were postponed indefinitely pending a reconsideration of the case, are now made effective April 4, 1927.

A by-law has been passed by the town council of Blind River confirming an agreement with the Carpenter-Hixon Co., Ltd., which will build a $7,000,000 wood-working plant there, to grant a fixed assessment to the company of $80,000 a year. A deputation representing the company waited upon Hon. W. Finlayson, Minister of Lands and Forests, and discussed details of the construction of the new plant, work on which is expected to start within a few weeks.

It is understood that a plan will shortly be submitted to the bondholders of the Dryden Paper Co., which will wipe out the arrears of interest by the distribution of new common stock in the company. If such a proposition proves acceptable to the bondholders, it will eventually mean that the company will pass out of the hands of the receiver. The earnings of the company, which manufactures sheathing paper, kraft and manila wrappings and kraft pulp, are now said to be running at $25,000 to $30,000 monthly.

According to Hon. William Finlayson, Minister of Lands and Forests, the Provincial Government is consiedring the advisability of adopting a policy similar to the one recently announced by Quebec and is declining to grant any more pulpwood concessions to American and English interests who are constantly making application for the same. While no definite decision has as yet been reached in the matter, Mr. Finlayson said the province is not at present putting up any more pulpwood limits for sale.

The new plant of the Superior Paper Mills, Thorold, is just about ready to start producing lightweight specialties and tissues. The men behind the enterprise are a group who have spent their lives in the pulp and paper business and have come together to put up a mill for the manufacture chiefly of lines of paper not now made in Canada, but imported from the United States. J. M. Cathcart is president and general manager, J. T. Berhalter is vice-president and sales manager, and R. E. Liptrott, previously with the Interlake Tissue Mills, is secretary-treasurer.

Ritchie and Ramsay, coated paper manufacturers of Toronto, recently celebrated their thirty-first birthday. This organization was the first to embark on the manufacture of coated paper in Canada, and in spite of obstacles in the beginning developed steadily until its products are now mar-

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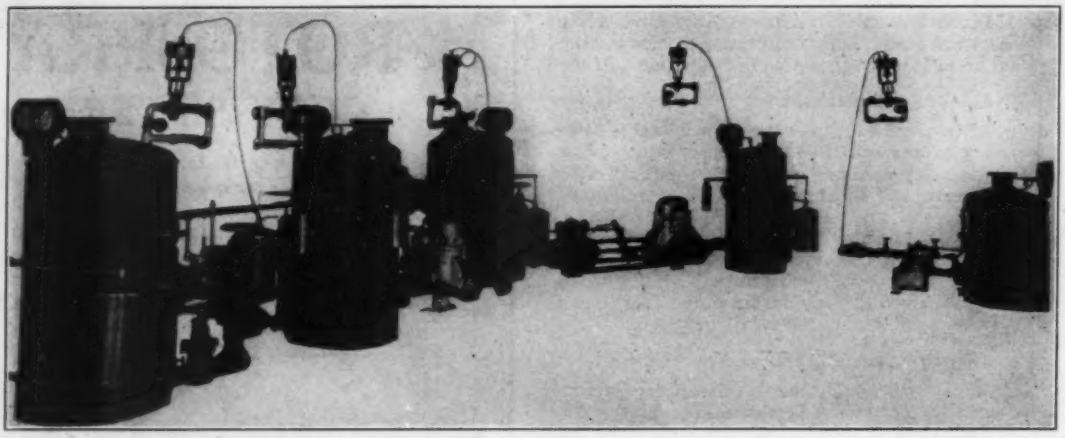

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Increased drying efficiency is being secured in paper mills throughout the country with the improved Fulton dryer drainage System. The picture shows five Fulton Circulators ready for shipment. Your drying can be improved by our practical experienced paper mill engineers.

Better sheet—More production—Lower cost

Fulton Engineering Co., Middletown, Ohio

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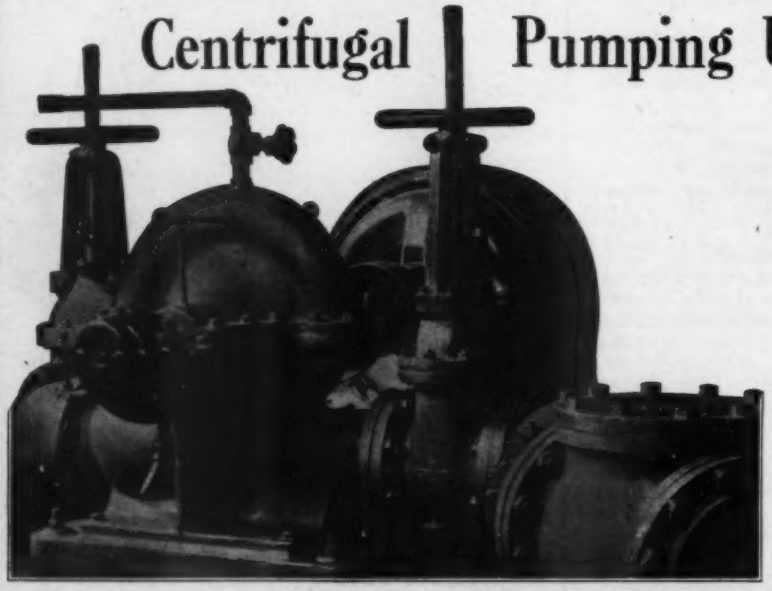


Which Are Suitable For Paper Mills

There are different kinds of pumps for different uses in Paper Mills. You don't have to buy an experimental pump if it has an Allis-Chalmers name-plate. The right pump for each particular service has been proven by many applications and can be furnished from a complete line.

Write for Bulletin 1632 H.

ALLIS-CHALMERS

MILWAUKEE, WIS. U. S. A.

keted all over the Dominion and in other countries. The late Mr. Ritchie was the first to adopt the slogan "Made-in-Canada," and adhered to in spite of criticism with a movement now so-widespread that in nearly every province of the Dominion there are Made-in-Canada associations.

Harry Ramsay, son of the late C. N. Ramsay, has been appointed factory manager of Ritchie and Ramsay's coated paper plant at New Toronto, and Frank West, an old employee of the firm, has been appointed superintendent.

At Iroquois Falls

Owing to several bad accidents, including three fatal ones, the wages and time lost, as well as the compensation payments, were considerably higher last year than in 1925—but with deduction of the three fatal accidents, the general run of mill accidents was lower in 1926 than in 1925. While the totals cannot be overlooked, there is a certain amount of satisfaction in knowing that the ordinary man in the mill has held his own or improved in safe operation, and also that greater attention is being paid to immediate first aid treatment of injuries than was paid in 1925.

Affiliated Engineering Companies, Ltd., announce the transfer of A. C. Malloch to their Toronto office. Mr. Malloch, formerly with the Mechanical Department of the Canadian Pacific Railway in Montreal, recently returned from extended visits to the works of the Diamond Power Specialty Corp. of Detroit, the Elliott Company of Jeannette, the Rust Engineering Co. of Pittsburgh, and the American Engineering Co., Allen Sherman Hoff, and the Philadelphia Gear Works of Philadelphia, whose products are among those handled by Affiliated Engineering.

Abitibi Fibre Remains in Toronto

A meeting of the officers of the Abitibi Fibre Co., which recently acquired the plant and properties of the Mattagami Pulp and Paper Co., at Smooth Rock Falls, was held in Toronto last month. It had been rumored some time previously that the head office of the concern would be moved from Toronto to Montreal, where the parent company has its head office, but it is now learned on good authority that there will be no change of location for the present.

S. R. Armstrong, who has been manager of the company for the receiver for a number of years, has been made vice-president and operating manager of the company, continuing his headquarters in Toronto, and making frequent trips to the plant. E. R. Gosset, of Toronto, indentified with the Mattagami Pulp and Paper Co., for several years, has been made assistant secretary. Fred C. Clarke, late treasurer of the Mattagami organization, has gone to Montreal where he has taken an important position with the Royal Securities Corp.

The question of pure water for the pulp and paper mills in the Niagara district, which was rendered very acute by dredging operations in the new Welland Canal, promises to find a happy solution. Dredging will start again in full blast in April; but the municipalities of Thorold and of Merritton are going to filter their own water, while the Lincoln mill is going to install its own filters, the requirements of this mill being so great that they cannot be supplied by the town.

Improvements at Lincoln Mills

The increased Canadian demand for special grades of paper have led the Lincoln Pulp and Paper Co., to make a series of improvements which include the installation of new equipment. Several changes are being made on the fourdrinier machine at the Lybster mill, and these changes necessitate increased beating capacity, which will be taken care of by rebuilding their present beaters into the new type, heavy consistency, Dilts beaters.

Improvements at the Lincoln mill call for four complete Dilts new type beaters, with siphon washers, and will increase production of high quality rope papers. The beaters will be driven by individual motors equipped with the latest type of recording instruments.

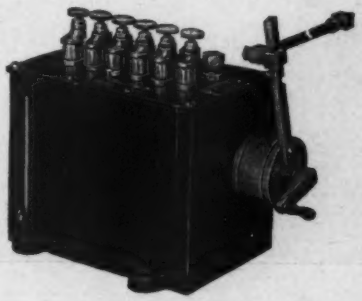
BOWSER

THE Model T lubricator is high-class but moderate-priced. It is built entirely of machined parts. There are no stampings used. All moving parts are constantly lubricated with a maintained film of oil.

Model T lubricator is supplied for sizes from one to twenty-eight feeds —more if needed. Either ratchet or worm-gear drive can be supplied.

Each lubricator is tested against a 2000-pound pressure. This makes Model T particularly applicable for installation on paper machines for the efficient lubrication of calender rolls.

There are several descriptive circulars that tell about Bowser's complete line of lubricators as well as all about Model T.



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More than 600 mills in this country and Canada are using Nash Hytor Vacuum Pumps for removing air and water from flat boxes, felts, wires, rolls and similar machines.
These concerns know vacuum pumps. They are mills wherein every piece of equipment must prove its worth by superior service in actual operation—where standards of performance are most exacting and rigid.
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Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. BOSTON, MASS.

MANITOBA

Manitoba Paper Co. Secures More Wood

Under the terms of an Order-in-Council passed by the Federal Government last month, the Manitoba Paper Co., is given the right to select 4,000,000 cords extra of pulpwood on the east of Lake Winnipeg. Under the old contract it acquired 2,000,000 cords, so that the total is now 6,000,000 and this will enable the company to increase its capacity from 125 to 250 tons a day by installing another paper machine.

The matter had been the subject of negotiations for some weeks and certain objections were imposed by the Provincial Government, but all the difficulties have now been cleared away and the contract will be executed at once. The minimum price to be paid for the wood is $1.40 a cord, although much of it will command a higher rate.

F. W. Backus has sent a statement to the Manitoba Industrial Development Board to the effect that he will start the erection of a pulp and paper mill on the Red River, probably near Selkirk, by June 1st next, providing certain provisions are complied with. Mr. Backus asks as a condition that the Federal Government furnish him with "the necessary fundamentals, viz., pulp wood and power site." He offers to give satisfactory bonds for due performance.

BRITISH COLUMBIA

In connection with the recent purchase by the Powell River Co., of a billion feet of timber on Graham Island, it is stated that the company will spend not less than $500,000 in creating a new port on Graham Island as an outlet for its new timber limits, and that in addition a standard-gauge line will be built inland from the portsite at a cost of about $750,000, and the logs thus brought out will be taken to Powell River to be converted into paper.

Frank N. Youngman, formerly manager with the Thunder Bay Pulp and Paper Co., at Port Arthur, Ont., has joined the executive staff of the Crown-Willamette Paper Co. The company's activities in Canada are carried on at Ocean Falls, under the name of the Pacific Mills, Ltd., and Mr. Youngman has been appointed manager with his office in Vancouver.

Plans by the Canadian Rayon Pulp Co., Ltd., to establish the first unit of a pulp and paper mill at New Westminster to cost about $750,000, were unanimously endorsed at the annual meeting of the New Westminster Board of Trade. Concrete evidence of support was given when $6,000 was subscribed at the meeting towards the purchase price of $35,000 for Poplar Island, where the industry will be established. The company has made an offering of $750,000 of first mortgage notes to finance the construction of the mill. With each gold note is a 40 per cent bonus of common stock.

Experiments carried on for some years by several of the large pulp mills on the Pacific Coast with a view to utilizing woods other than spruce, hemlock and balsam in the manufacture of pulp have been surprisingly satisfactory, and it is hoped and expected that before many years a considerable amount of fir and cedar will be used as pulpwood. This would be of considerable importance, as these species are obtainable in larger volume and much more easily than those at present being utilized. Cottonwood and poplar, which grow extensively in the northern interior regions of the province, may be used in the event of a pulp mill being established near Prince George.

First hand evidence of the rapid growth of the Westminster Paper Mills, New Westminster, during its four years of operation, was presented to a large party of jobbers and travelers in the paper business, who were recent guests of the officers of the company. The majority of the visitors were

5% Plus
That's the Stuff

which soon tests the stamina of a stuff pump. Warren Stuff Pumps, built by men who know the rigid requirements of pulp transportation, have well proportioned passages; just the right clearances—and sturdy construction reduces maintenance costs. Production efficiency depends upon the reliability of the equipment used. We know many mill men who are real boosters

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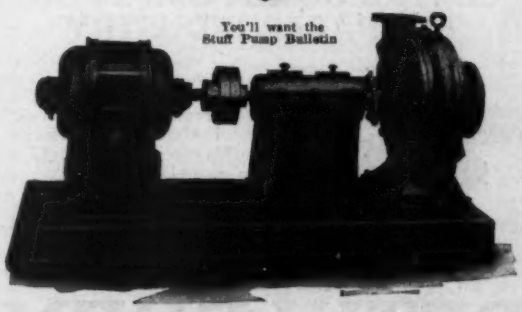
The results of experience covering 29 years are bound to mean better satisfaction to users. Among many notable features—the Warren Stuff Pump has renewable case liners; reduced slippage cuts production costs. Stuff pumps do their work out of sight—make it possible also to have them "out of mind" by specifying

WARREN



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Ask about our spare time agency proposition. It won't interfere with your regular work.

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"BEST AT EVERY TURN"

MAGIC BOILER PRESERVATIVE

"The Pioneer Boiler Treatment"

Positively removes and prevents scale, stops minor leaks, pitting and corrosion

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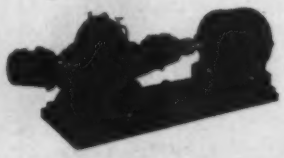

The Bethlehem Horizontal Centrifugal Pump is of the double-suction, single-stage type with horizontal split casings. Capacities 200 to 17,000 gallons per minute against heads of 20 to 250 feet.

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Pickles' Patent Automatic Steam Regulator FOR Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

W. F. PICKLES Buckland, Conn.

PRESSURE PIPE THAT NEVER BURSTS
Built in sizes 1 inch to 48 inches

WYCKOFF WOOD PIPE

The Paper Industry is successfully using thousands of feet of this Pipe and they find it to be the best conveyance for White Water, Paper Stock, and Acids that can be obtained

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present at the opening of the paper mill when just the machinery necessary to turn out tissue and crepe papers was in operation. Since that time additional machines have been added and more lines manufactured to meet practically every need, with the exception of news print and book paper. Additional interest is now lent to the plant following the announcement that the equipment for the new pulp mill has been ordered and a portion of the product contracted for.

NEW BRUNSWICK

The annual report of Bathurst Co., Ltd., for the year ended December 31, 1926, shows improved earnings for the year and a substantial increase in working capital. Net operating profits, after manufacturing, selling and administration expenses, were practically the same as for 1925, being $853,437 as against $854,032, but material reductions in bond and other interest payments resulted in the net profit and loss balance for the year, after all charges including income tax provision, of $68,191, as against $16,158 for the preceding year.

The fine residence of Angus McLean, president of the Bathurst Co., at Bathurst, was practically destroyed by a fire early one morning in February. Most of the personal belongings, including some valuable jewelry belonging to Mrs. McLean, were lost, although some of the household effects were saved.

Efforts are being made by maritime provinces pulp and paper manufacturers to have the Canadian Government negotiate a trade treaty with the United States under which pulp and paper of all kinds would be allowed into the United States free of duty. Newsprint is now in this category, and the export of newsprint to the United States from the maritime provinces has been increasing annually. If the better grades of paper as well as the pulp could be shipped across the line without duty, the beneficial results to the maritime pulp and paper manufacturers would be great. It has been pointed out that with the elimination of the tariff on the higher grades of paper, practically all the pulp and paper mills would turn to the production of these more costly papers.

The tunnel, a part of the construction operations at Grand Falls being executed for International Paper by the Dominion Construction Co., of Montreal, has been extended over 1,200 feet. There will be no cessation of operations on the tunnel during the winter, but the remainder of the work is reported closed up until spring. The development at Grand Falls is under the direction of the St. John River Power Co., an International Paper subsidiary.

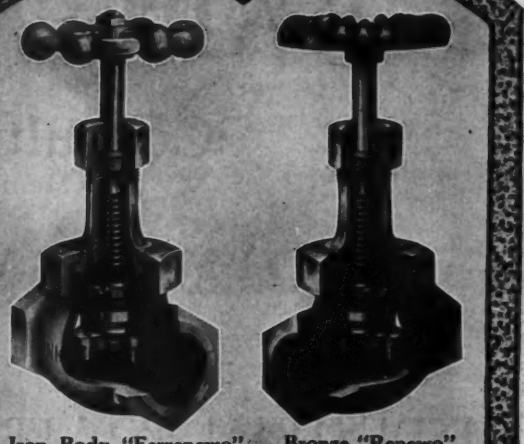
The annual report of Fraser Companies, Ltd., and its subsidiary Fraser Paper, Ltd., for the twelve months ended December 31, 1926, covers the most satisfactory year's business reported by the company since 1920. Earnings, after operating expenses and Federal and general taxes, were $1,561,825, or $428,754 higher than for 1925. After large write-offs for depreciation and depletion, bond interest was earned over three times, and the balance available for dividends was approximately 3.8 times the amount distributed on the 7 per cent preferred shares, leaving earnings equivalent to $4.53 per share of common stock, as compared with $2.78 in 1925. Payment of 2 per cent on common stock during 1926, and deduction of $84,500 for commission and discount on securities sold, left net surplus earnings for the year of $168,562 to be added to profit and loss account.

NOVA SCOTIA

Favor Export Tax on Pulpwood

At the request of President Angus McLean and of Secretary R. P. Bell, of the Canadian Pulpwood Association, the Cape Breton County Council has taken a vote on the question

A COMBINATION
That Will Effect Economies
In Your Plant Operation



Iron Body "Ferrenewo" 150 lb. W. S. P.
Bronze "Renewo" 200-300 lb. W. S. P.

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Seating surfaces are regrindable and all parts, including the nickel seat and disc, can be renewed without removing valves from pipe lines.

In sizes ¼ in. to 2 in. inclusive all parts of the "Ferrenewo" and medium "Renewo" are interchangeable, excepting bonnet rings.

This feature makes it unnecessary to carry a wide assortment of replacement parts, facilitates repairs, simplifies ordering, and reduces your ultimate valve cost.

Lunkenheimer Distributors, located in all industrial centers, carry complete stocks, and will fill your orders promptly.

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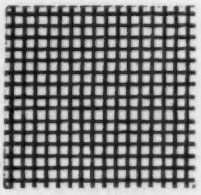
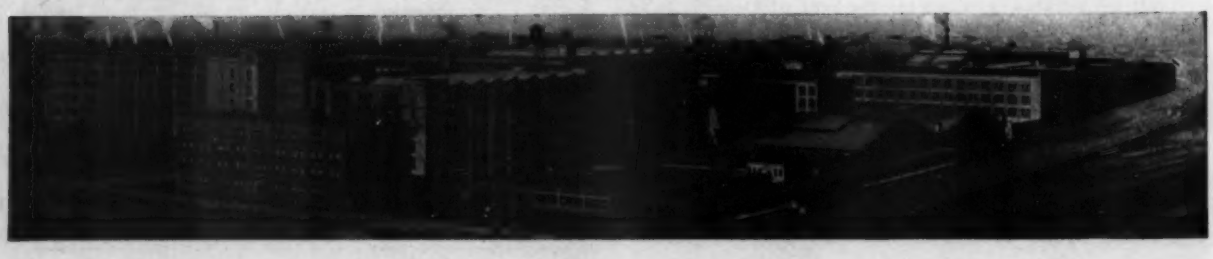


THE
W. S. TYLER COMPANY
Cleveland, Ohio, U. S. A.



of an export tax on pulpwood, and by 17 to 7 declared itself in favor of a tax of $2.00 per cord on pulpwood shipped out of the Province.

Messrs. McLean and Bell recommended that the council vote against the export tax, but urged a decision one way or the other, so as to assist in bringing matters to a head at the present session of the Nova Scotia legislature. The winning argument was that the proposed tax cannot make things any worse than they are, and that if it does not result in an improvement it can be dropped.

Barnjum and Bell Negotiating for Liverpool Mill

It is reported that Ralph P. Bell, of Halifax, is asking for certain concessions from Liverpool, N. S., for a newsprint mill which he proposes to erect there. At the same time F. J. D. Barnjum is continuing his negotiations leading to the establishment of another newsprint mill at Liverpool.

It will be recalled that Mr. Barnjum headed the extensive propaganda in favor of placing an embargo on the exportation of pulpwood a couple of years ago, while Mr. Bell was the chief antagonist of the move, and it was in no small measure due to Mr. Bell's active campaigning that Mr. Barnjum's suggestions received less serious consideration than they might have.

About eighteen months ago Mr. Barnjum was elected to the Nova Scotia legislature, and during his election campaign he had pledged himself to resign within one year if a pulp and paper mill of certain dimensions was not in progress of erection within the constituency of Queens, for which he was elected within that period. As he was unsuccessful in his negotiations, he fulfilled his promise and resigned his seat in the Nova Scotia house.

Much interest is being displayed, especially in the maritime provinces, in the race to establish mills between these two staunch supporters of opposing schools of thought.

Considerable consternation has been caused by the news that the McLeod pulp mills at Milton are about to close down. The McLeod mills have furnished the sole market for pulpwood from the district since the burning of the Caledonia mill last summer. A large amount of pulpwood has been cut on the borders of the lakes, in readiness for the spring drive down the Liverpool river, and it is hoped that this will yet be taken by the company.

English River Power Resources Surveyed

Premier G. Howard Ferguson recently stated that a survey was being made of the power facilities on the English River under the auspices of the Government. G. E. Farlinger, of Sioux Lookout, is conducting the survey for the Government, which will embrace all the power sites on the river in connection with most of which applications for development leases have been received at Toronto.

A deputation from Winnipeg recently conferred with the Premier, C. A. Magrath, chairman of the Hydro Electric Power Commission of Ontario, and W. N. Tilley. Inasmuch as the Winnipeg people depend upon the flow of about forty miles of the English River, they asked that before construction is allowed the Ontario Government undertake to construct a dam to conserve the flow. Mr. Ferguson said he would hold another conference with the Manitoba people before anything was done, but that no definite promise could be made until the survey has been completed.

Less than a week after the Canadian Pulp and Paper Association had definitely decided to proceed with the erection of the new Cellulose Institute on the McGill University Campus at a total cost of $350,000, including a $100,000 endowment fund, Messrs. Nobbs and Hyde were appointed architects for the new building. A committee has been appointed to consider building plans and to supervise the construction. It is hoped to commence building operations in the spring and that the building will be completed within a year.

P. G. Hinder has joined the sales staff of the Corrugated Paper Box Co., Toronto.

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Technical Association Papers, Series VIII (1925)

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Use of Decayed Wood for Bleached Chemical Pulp

MECHANICAL OPERATION
Alexander Electric Paper Drier
Burning of Wood Refuse
Moisture Meter and Its Use in Water Removal
Rotte' Steam Accumulator
Steam Prime Movers for Paper Mills
Ventilation of Paper Machine Rooms

MECHANICAL PULP
Norton's Segmental Pulpstone
Refiners for Groundwood Tailings

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Bureau of Standards and the Weiler Brittleness Test
Extractor and Cleaner for Carbon Paper
Pulp Weight Pesters for Microscopical Analysis
Relation of Paper Furnish to Paper Tests
Stains for Microscopical Analysis
Study of the Mullen Tester
Test for the Liquid Permeability of Paper
Tests at Various Relative Humidities
Use of the Glarimeter for Paper Finish

WASTE
Burning of Wood Refuse
Economy of Lime Reburning
Uses of Carbon Recovered from Black Ash
White Water and Stream Pollution
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Testing Aniline Dyes
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Write to THE PAPER INDUSTRY, 356 Monadnock Bldg., Chicago, Ill.

MICHIGAN NEWS

Net earnings of the Eddy Paper Corp., for the year ending December 31, 1926, were $91,696, after all charges and deductions, including federal taxes, or 73 cents a share on the 125,000 shares of no par stock, were made. Felix Pagenstecher, president of the Bryant Paper, and George T. Wolfe, Three Rivers banker, have been replaced on the Eddy directorate by A. J. Pettit and Adolph Keucken.

Raise Funds to Re-finance Bradford Company

Re-financing of the Bradford Paper Co., is now being undertaken by directors of the concern, according to Clarence A. Bradford, president, who reports that some plan will be worked out, aiming to protect the interests of creditors, stockholders and the industry alike.

Paul D. Hoel, secretary-treasurer, and George K. Taylor, vice-president, while not caring to be quoted, both expressed themselves as gratified at the evident desire of all interested parties to aid in the campaign that will place the concern again on a sound financial basis.

The plant of the Bradford Paper Co., has been operating steadily but those on the inside state that considerable business has been taken at a loss. Conditions have been further complicated by general depression in the coated paper trade during 1926.

Paper Cost Division Elects

F. L. Brown of the Michigan Paper Co., Plainwell, was elected president of the Kalamazoo Valley division of the Cost Association of the Paper Industry, recently. Elbert Milham of the Bryant Paper Co., was named vice-president, and Harry C. Bradford of the Rex Paper Co., was continued in the office of secretary-treasurer.

The program committee for 1927-8 is Elbert Milham, Harry C. Bradford and Frank Libby.

Their last program was an excellent one, with Frank Whittiger of the General Dye Stuff Corp., who gave a paper on "Colors, Their Use, and Control in the Beater." Hames H. Barrett of the Kellogg Co., Battle Creek, discussed "Accounting for Depreciation and Standard Cost." A. C. Dreshfield of the Western Paper Makers Chemical Co., spoke on "Short Cuts in Mathematics."

Western Board to Increase Capacity

The Western Board and Paper Co., will increase its capacity by the installation of a 68 trim cylinder machine for the manufacture of light board and wrapping paper, according to Winship A. Hodge, manager of the company. The daily output of the next machine will run 15 to 20 tons. The plant now averages an output of 80 tons a day with its present equipment.

The installation of the machine was brought about by the Western Board and Paper Co., buying all the mill machinery of the Carney Paper Co., Maumee, Ohio. The cylinder machine was found to be well adapted for use in the Kalamazoo plant. Much of the additional machinery will be disposed of.

Another improvement recently made at the Western Board was the installation of a Shartle Brothers cleaning system in the beater room. The cost was approximately $17,000.

Lynn R. Allen, 45, Comstock, an employee of the Kalamazoo Paper Co., sustained two fractured ribs, a spine injury and facial cuts and bruises recently when thrown onto a slitter in Mill No. 4. Allen was working on a ladder eight feet above the machine when his clothing became caught in a chain which threw him over the shaft onto the slitter, it is reported.

A pamphlet containing information on yields, prices, marketing methods, grade standards, and uses of flax and its by-products has been prepared by the Bureau of Agricultural Economics, United States Department of Agriculture, Washington, D. C., and may be obtained by request.

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FOR difficult drives it is hard to beat Watershed Tannate. It is more than a waterproof belt. It is very resistant to machine oils and will stand up in wet steam temperatures of 200 degrees or even more.

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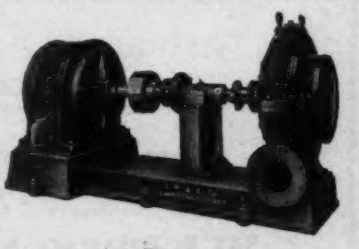

Fig. 67

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PACIFIC COAST NEWS

Anticipation of the arrival of the first shipment of machinery for the Longview Fibre Co., plant, now under construction on the Columbia River at Longview, includes tanks and large digesters, in the first load.

The paper mills in Salem, Oregon were forced to close down for a few days during the high-water and floods along the Willamette valley late in February. However, they resumed operation before the close of the month.

Governor Parks on Alaskan Paper Situation

"Alaska today can produce 1,300,000 tons of newsprint paper annually without depleting our forest reserve by a single board foot," Governor George A. Parks, said recently while in Seattle.

"To manufacture this paper 432,000 horse power is necessary, according to the latest estimates. Undeveloped water-power sites in the territory where this development will take place is estimated at 475,000 horse power." He declared that five pulp and paper manufacturing concerns had made application for power sites in Southeastern Alaska.

First actual construction in preparation for the new Grays Harbor Pulp Co., is now under way at Eureka by the Cedar Lumber and Shingle Co. Foundation is being built for a chipper that will convert mill waste for use in manufacture of wood pulp. F. C. Shaw and John C. Hogan have incorporated the Gray Harbor Pulp Co., at Hoquaim for $2,000,000.

The Powell River Paper Mills Co., Powell River, B. C., is planning improvements in the town which ultimately will cost $1,500,000. These improvements include additional homes, a department store, motion picture theatre, community hall, and hospital. The company has just added a pulp grinding and machine building.

Stockholders of the San Juan Pulp Mfg., Co., have increased the capital stock from $300,000 to $400,000. The plant is now operating to capacity and will soon supply the Pacific Coast Paper Mills Plant.

Geo. P. Berkey at Crown-Willamette

On February 1, George P. Berkey took up his duties as vice-president of the Crown-Willamette Pulp and Paper Co., with head-quarters in Portland, Oregon. Mr. Berkey came to Portland from the East, and is spending his first few weeks with the company becoming acquainted with the operation of the plant and its various mills.

He is well-known in the industry, having been connected with it for twenty years, with practically all of that time being spent with the Consolidated Water Power and Paper Co., large manufacturers of newsprint, sulphite and specialty papers in Wisconsin. He has also been connected with their subsidiary company, The Thunder Bay Paper Co., in Ontario.

Joining the Consolidated Co., when it comprised only one small mill, Mr. Berkey has had a large share in its growth. For several years prior to his recent resignation he held the position of vice-president and general manager of all of the Consolidated properties. Like a number of persons in the industry, he was attracted to the West by the outstanding natural advantages which this section of the country in the manufacture of pulp and paper holds out for the future.

Astoria Box Co. Builds New Mill

Work was to begin about March 1, on a pulp mill in Astoria, Ore., by the Astoria Box Co. The company which was recently re-incorporated for $1,500,000 will be known as the Northwestern Pulp and Paper Co. Only the pulp mill is to be built now, but the financing program provides for the erection of a paper mill also which will be started later.

Twenty city lots adjoining the mill site of the box company were recently deeded by the city to the company and afford a location for the pulp mill. Delinquent taxes on the property

Photo shows a REEVES Transmission driving a paper cutter at the Southworth Company, Mittineague, Mass.

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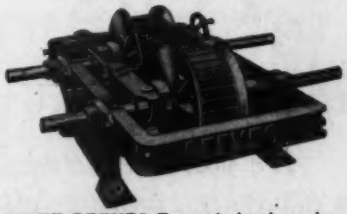

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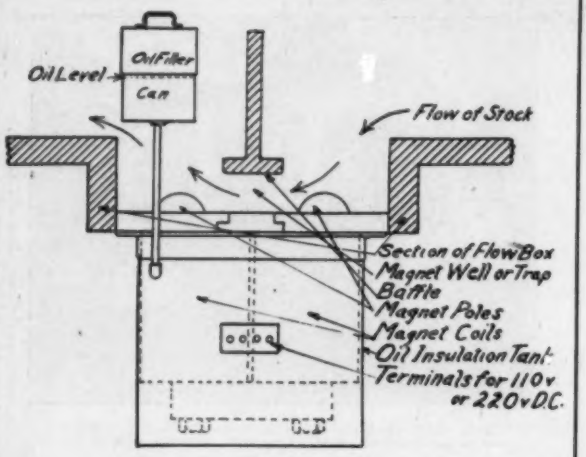

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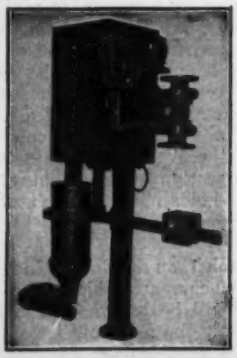

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MIAMI JORDANS

were remitted, and a guarantee of 1,000,000 gallons of water daily for the use of the plant was made by the city.

This will be the first pulp mill to be established at the mouth of the Columbia river. The Astoria Box Co., however, is the oldest lumber establishment on the lower Columbia. It is expected that employment will be given to from 500 to 750 men and that three shifts of eight hours daily will be operated instead of one shift of 250 men.

C. R. Seaborne, chief paper mill engineer Thilmany Pulp & Paper Co., of Kaukauna, Wis., has moved to Longview.

WISCONSIN NEWS

Foremen's Safety Schools

That the Fox River Valley Safety Conference, which was organized two years ago and has held conventions in Green Bay and Appleton, is making progress, is seen from the success of the Foremen's Safety Schools which were opened in the two cities during the past month.

Preparations were made long before the opening of the classes, and many meetings were held by the committees so that a really constructive program could be put into effect. It became necessary several times to revise the original plans so that there would be no hitch. Letters containing the program and registration blanks were sent to all employers in these cities and surrounding territory. Many industrial plants, mostly paper mills, responded, and with a real spirit of cooperation. The schools are being sponsored by the vocational schools, the chambers of commerce, the state industrial commission, and the mills.

Two hundred foremen and others interested in greater prevention of accidents attended the first session of the Foremen's Safety School in Appleton on Feb. 7, and about three hundred attended the Green Bay school. The meetings are held on one evening of each week. R. G. Knutson, of the Wisconsin Industrial Commission, was the principal speaker at Appleton, and George P. Hambrecht, State Director of Vocational Education, spoke at Green Bay. Austin E. Coffrin, manager of the Fort Howard Paper Co. mill, presided at the latter city, and Dr. H. K. Pratt presided at Appleton in the absence of E. H. Jennings, president of the Appleton Chamber of Commerce and an executive of the Thilmany Pulp and Paper Co., of Kaukauna.

Judson G. Rosebush, president of the Patton Paper Co., of Appleton, and of the Northern Paper Mills, of Green Bay, presided at the second meeting in Green Bay on Feb. 14, and H. G. Boon of the Kimberly-Clark Co. presided on the same day at Appleton. Ernest Augustus of the Mead Pulp and Paper Co. of Chillicothe, Ohio, spoke in Appleton, and Dr. E. G. Nadeau of Green Bay in that city. Sectional meetings were held for paper mill, woodworking, metal shop, and public utilities workmen.

P. M. Allen of Detroit, Mich., was recently appointed receiver for the Peshtigo Paper Co., of Peshtigo, Wis., to succeed John D. Bird, of Milwaukee, Wis., who resigned. With this announcement also came notice that the plant will be offered for sale. It is expected that liquidation will bring about a re-organization of the company on a sounder basis. Involuntary bankruptcy proceedings were started against the company about a year and a half ago by the First Wisconsin National Bank and the American National Bank, of Milwaukee, in order to protect loans totaling $225,000. It is said that the banks will still lose about $125,000 and that the total losses will approximate $300,000. The book value of the company is given at $2,264,960. Securities include $1,114,000 of first mortgage bonds, $600,000 in debentures, $991,000 of first preferred stock, $230,000 of second preferred stock, and $228,000 of common stock.

D. B. Davies, superintendent of the Hoberg Paper and Fibre Co., Green Bay, for three years, has resigned to take a similar position with the Rainier Pulp and Paper Co., Shelton, Wash. This is a new mill, and will be in operation

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OUR ALL SULPHATE BOARDS
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—MAXIMUM STRENGTH—
—MINIMUM WEIGHT—
—CALIPERS .014 TO .040—

HUMMEL-ROSS FIBRE CORPORATION
HOPEWELL, VA.

by April 1. Mr. Davies' successor is Max Ketter, who was promoted to that position.

S. F. Shattuck was re-elected chairman of the board of trustees of the Mutual Benefit Ass'n of the Kimberly-Clark Co., at the annual meeting held a few weeks ago.

Probably the oldest legal adviser of any paper mill in the United States is counsel retained by the Kimberly-Clark Co., of Neenah. He is Moses Hooper, of Oshkosh, who recently celebrated his ninety-second birthday anniversary. He has been the company's attorney for more than 50 years, and has practised law for 70 years.

Arthur Barrett resigned his position with the Peshtigo Paper Co., of Peshtigo, and took another with the Hoskin-Morainville Paper Co., of Menominee, Mich.

Appleton Coated Paper Co. of Appleton, Wis., has installed a new coating machine bought from John Waldron Co., of East Brunswick, N. J., which is 48-inch size and will be used for paper of smaller width than is now being produced by the paper company.

A stir was created in industrial circles of Wisconsin by the report that several mills in the Fox River Valley were contemplating discharging married women employees and replacing them with single women. The reports were denied from various sources. It is believed to be propaganda for some more legislation along these lines. A bill to that effect was introduced at a meeting of the Outagamie County Board but received very little sympathy.

Future expansion is being provided for by the Bergstrom Paper Co., of Neenah, Wis., with the purchase of additional property adjoining one of its warehouses. A building on it will be removed.

Isadore Schilling, pioneer in the paper industry of La Crosse, died in that city a few weeks ago, at the age of 92 years. He was the founder of the Schilling Paper Company of that city.

D. C. Everest, general manager of the Marathon Paper Mills, of Rothschild, was elected vice-president of the American Forest Association of Washington, D. C. last month.

It is expected that the power project of the Nothern Electric Co., subsidiary of the Nothern Paper Mills, at Chalk Hills, will be completed about May 1. Longer time will be required for the twin project at White Rapids, which was interrupted during the winter by high water and ice jams. Power from the two dams will be transmitted to the paper mill in Green Bay.

James Simpson, machine-room superintendent of the Consolidated Water Power and Paper Co., has been appointed manager of the Wisconsin Rapids mill to succeed C. E. Jackson, who has been transferred to the managership of the Thunder Bay Pulp and Paper Co., of Port Arthur, Ont., Canadian subsidiary of the Consolidated company. Mr. Jackson succeeds Mr. Youngman who resigned to become affiliated with the Crown-Willamette Company, as did General manager Berkey of Wisconsin Rapids.

A donation of $5,000 to a Stevens Point hospital was made last month by C. A. Babcock, president of the Wisconsin River Paper and Pulp Co., of that city.

Officers elected by the Ahdawagam Paper Products Co., of Wisconsin Rapids, at the annual meeting include: H. A. Sampson, president; I. P. Witter, vice-president; Frank R. Walsh, secretary and treasurer. Additional directors are G. W. Mead and P. C. Daly. A satisfactory year's business was reported.

Howard Palmer, a federal government engineer for Fox River improvements projects, has resigned to become associated with the Kimberly-Clark Co., of Neenah.

Charles D. Waters, head chemist of the Peshtigo Paper Co.,

Money Savers Around Pulp and Paper Plants

Around pulp and paper plants "AMERICAN" Locomotive Cranes save space by stacking more logs in a given area, expedite release of cars by unloading more rapidly, unload coal, machinery, etc. Not the least of the value of "AMERICAN" Locomotive Cranes lies in their car switching ability. At this work they have handled from 12 to 25 loaded cars at one time.

"AMERICAN" Locomotive Cranes have an enviable reputation for rugged dependability. This quality is of the very first importance in a machine that is depended on to keep the plant fed up with coal and raw materials. It is the feeder of the plant and if it "falls down" on the job the plant starves for materials.

When purchasing a locomotive crane on which uninterrupted operation of your plant depends it is the part of wisdom to look past the first cost and focus on results. It is better to be able to report —after a year's operation, "The crane just works all the time—no repairs—no breakdowns," as did an enthusiastic "AMERICAN" owner in Texas, than to have to balance a lot of lost time and lowered production against a small "saving" when you bought the crane.

Unfailing dependability is the characteristic which makes staunch friends of all users of "AMERICAN" Locomotive Cranes.

Post up now on the crane proposition; the "AMERICAN" Locomotive Crane Book and the "Five Star Points" Booklet will help you. May we send them?

AMERICAN
HOIST & DERRICK CO.
Saint Paul, Minn.
New York, Chicago, Pittsburgh, Seattle, St. Louis, New Orleans.

8" Horizontally Split Casing Single Suction Belted Pump for Handling Heavy Stock

Built in sizes ranging from 2" to 18". 42 years designing and building centrifugal pumps for all conditions and service. Our engineering staff is ever at your service.
Please submit your specifications.

LAWRENCE MACHINE COMPANY
LAWRENCE, MASS.

Manufacturer of "Lawrence" Pump, Centrifugal Pumping Machinery, Vertical Steam Engines, Contractors for Special Machinery

SPECIFY

Powell Valves

For Long Uninterrupted Service

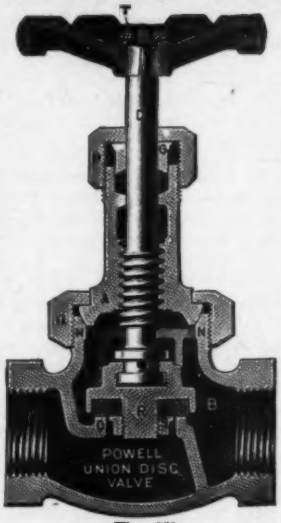


Fig. 150

Powell Composite Disc Valves

are furnished with bronze body and trimmings or iron body with bronze trimmings.

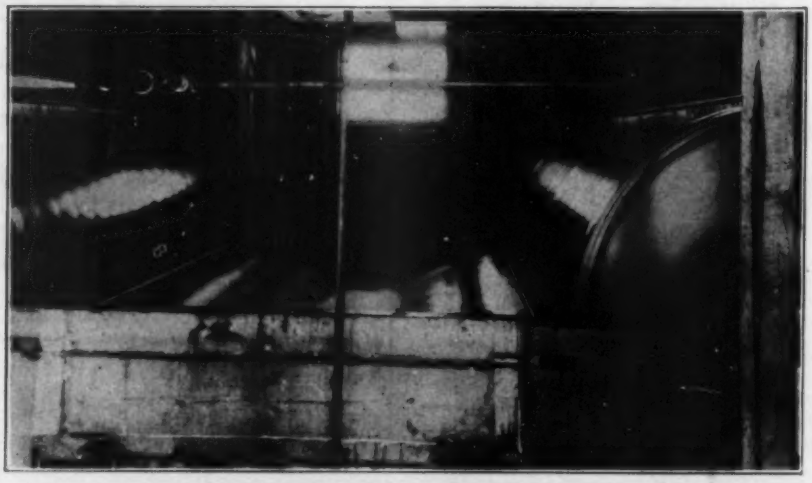
Bronze valves with union outlets are obtainable for both hot water and steam heating installations.

Discs are interchangeable with all standard vulcanized discs. However, we recommend Powell.

Descriptive circular on request.

THE WM. POWELL CO.
Dependable Engineering Appliances
2521-2531 Spring Grove Ave., Cincinnati, Ohio

THE NORTH WATER FILTER



Above cut is 20,000,000 gallon outfit for Northern Paper Mills. We have one 100,000,000 gallon installation and over 1,000 smaller jobs.
THREE SIZES.

Save-Alls Stone Bed Plates

See Page 347 in the 1925 Paper and Pulp Mill Catalogue.

GREEN BAY FOUNDRY AND MACHINE WORKS, Green Bay, Wis.

Peshtigo, has resigned to take a similar position with a paper mill in the east.

Frank E. Holbrook has resigned as general manager of the Combined Locks Paper Co., Combined Locks, Wis., with offices in Appleton, to become associated with the International Paper Co., with which he was previously connected for twelve years. He had been with the Combined Locks company for the last five years.

American Writing Sells Depere Mill

The newly organized Nicolet Paper Co., will manufacture glassine paper at the Depere, Wis., mill, recently bought from the American Writing Paper Co. There will be extensive alterations in the plant, according to all reports.

This sale follows the policy of President Willson of the American Writing Paper Co., to dispose of all distant properties, and the fact that the new owner will not undertake the manufacture of writing papers, is significant, since this withdrawal from the field means no competition to Holyoke. It is understood that paper on hand, colors, and box lumber were not included in the sale.

NEW ENGLAND NEWS

Final Re-organization Plans for American Writing

The last steps in the re-organization of the American Writing Paper Co. are being completed. The Shattuck and Babcock division at DePere, Wis., has been sold to Nicolet Paper Co., of Wis. for $450,000, authority to that effect having been received from the Federal District Court at Boston. On December 28, Receiver Willson reported cash on hand of $529,245 including the amounts received from the sale of the Ohio properties. Since then receiver's certificates of indebtedness have been retired, and $25,000 paid as attorneys' fees to date. On February 17th, the receiver reported cash of $166,245. The net proceeds from the sale of the Ohio mills amounted to $156,822 and this was largely applied to cancellation of receiver's certificates. In the meantime, the amount of notes, acceptances, and accounts receivable on February 17 greatly exceeded the same items receivable on December 28, and the obligations of the receiver were vastly less than on the previous date. In connection with the sale of the Wisconsin property, the receiver excepts the paper at present stored at the plant, colors and boxboard lumber.

A dinner of more than 100 executives, heads of departments, chief clerks, superintendents and others was held at the Hotel Nonotuck in Holyoke during the past month celebrating the practical fulfillment of everyone's ambition in the American Writing Paper Co.,—the restoration normalcy by the ending of receivership. President S. L. Willson presided and was the first speaker. He outlined the disappointments encountered when he first came to Holyoke four years ago and the course of affairs since then. Told in all modesty, it is a striking tribute to the character of the man that he has persevered through all the trials of these years when several times it appeared that dissolution was the only alternative. But Mr. Willson gave full credit to his associates for their loyal co-operation in putting the company back on a stable basis.

Former Mayor White of Holyoke was the second speaker, and he emphasized the admiration of the City for Mr. Willson and his loyal co-workers for their accomplishment. He spoke from knowledge in declaring that the company has restored complete confidence in them on the part of the paper merchants and consumers throughout the country.

The final speaker was Industrial Executive F. E. Reynolds who outlined recent developments in the paper industry and described conditions in the Eagle A plant and proposed improvements and changes.

A well-known manufacturer of paper mill machinery,—the Emerson Mfg. Co., of Lawrence, Mass., was destroyed by fire on February 17 at the same time the Lawrence Machine Co. manufacturers of a general line of industrial pumps were

Plan Now for Summer!

NOW is the time to make your plans for Summer. Spring freshets will fill your water supply with dirt and debris. Then Summer's low water periods will bring a lot more pollution to give you trouble.

If your plant isn't properly and adequately equipped with Norwood Water Filters—if you haven't secured full information about what these efficient filters will do for you by helping to keep your plant in continuous operation, cutting down expenses and decreasing the amount of "seconds"—Now is the time to take action.

We'll gladly send you catalogs and information about NORWOOD Filters and Paper Mill Machinery

Norwood Engineering Co.
Florence, Mass.

FILTERS SUPER CALENDERS GLASSINE CALENDERS
PLATERS DUSTERS BRUSHING ENGINES

PATTEN PAPER CO., Ltd.

Manufacturers of

SPECIALTIES

and High Grade Printing Papers

JUDSON G. ROSEBUSH, *Pres.*
A. C. REMLEY, *Vice-Pres.*
ERIC D. LINDBERG, *Sec'y.*
STEPHEN C. ROSEBUSH, *Treas.*

Mills at

Appleton and Kaukauna, Wisconsin

Office: Appleton, Wisconsin

GLASSINE GREASEPROOF PARCHMENTS

Plain—Colored—Embossed

Bleached and Colored, Light and Heavy, Extra Strong Machine, Water Finish and Supercald

Specialties of all Kinds

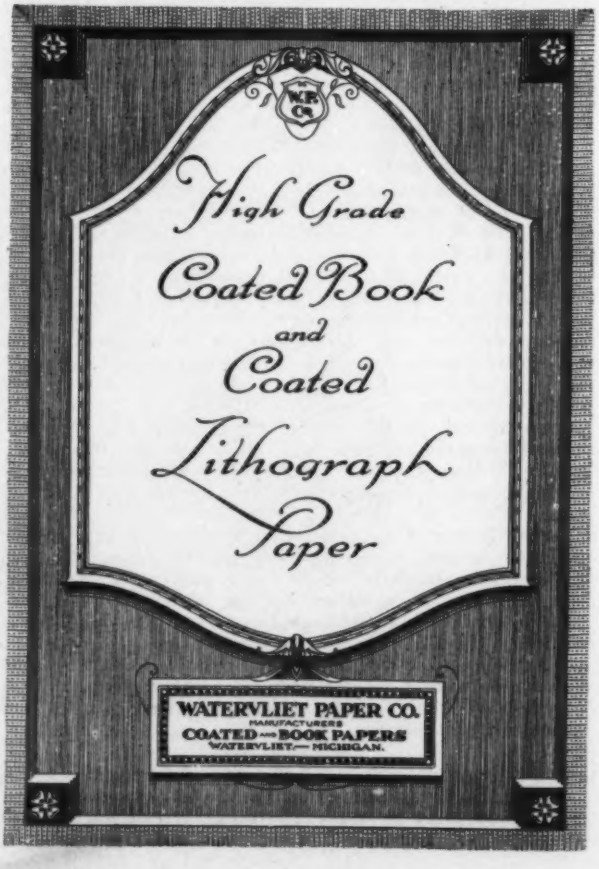
BAG—BOND—DRUG—WAXING — MANIFOLD

"HERCULES BRANDS"

Established 1825

McDowell Paper Mills

Manayunk, Philadelphia, Pennsylvania



destroyed. Both plants are adjacent to one another and the loss is estimated at $300,000. Many valuable machine patterns were destroyed as well as processing machinery and machines in process of construction.

Manufacturers in New England are taking great precautions against a coal strike. The receipts of tidewater coal at Boston were nearly 600,000 tons in January, over 100,000 tons in excess of the receipts a year ago. Both tidewater and all rail receipts were much heavier in the Holyoke district and the stock piles of leading paper mills in that district swelled very noticeably.

Senator Gould's Road Takes New Life

The railroad of Senator Gould of Maine which caused such a furore at the close of 1926 when his franchise was about to expire, and the future of the road depended on the encouragement of the International Paper Co., has taken on a new lease of life. This line proposes to traverse a region of Aroostook County rich in timberland where the International Paper Co. has tremendous holdings. At both ends it is to be linked up with the Canadian Pacific, a fact which gave rise to strong opposition in Maine where it was thought to be solely in the interests of Niagara Falls, N. Y., mills. Maine has enough pulpwood to supply her mills in perpetuity if the forest fire menace is controlled, but this new factor would place a very severe drain on the best timber in the state. It is understood that President Graustein of the International Paper Co. withheld full approval of the road pending favorable action of the Maine legislature on enabling bills giving the International right to develop power on the Fish River.

It is now announced that the International plans to construct a big mill on the St. John River between Fort Kent and Madawaska, Me., and the storage and power dam at Fish River Falls just above Fort Kent would make power available for their mill. Besides favorable action on this measure, the International Paper Co. has failed to agree with Senator Gould and other interests as to stumpage rights and prices along the right of way of his railroad.

The Fish River Project would also increase the flow of the St. John River thereby benefiting the St. John Power Co., at Grand Falls, N. B., a subsidiary of the International Paper Co.,

Paper mills and their projects on Maine rivers promise a lively battle in the Maine legislature during the current session. Besides the Fish river project of the International Paper Co., the Great Northern Paper Co., Hollingsworth & Whitney Co., and the International are understood to be supporting the Dead River storage bill which is before the legislature as the Kennebec Reservoir Co. The latter corporation if granted a charter will construct a dam on the Dead River a tributary of the Kennebec. It was passed in 1923 but vetoed by the Governor. It is understood the present chief executive is favorable to it. Floods and droughts follow each other on the Kennebec and this dam will correct this condition besides supplying power.

The improved beater of the Dayton Beater & Hoist Co., has made a very favorable impression on the tissue paper center of Hinsdale, N. H. It is understood that the Ashuelot Paper Co., the two Robertson mills and Fisk Paper Co., have or are about to install one or more of these beating engines. The results so far achieved at the Ashuelot Paper Co., are excellent. It is reported to be a power saver and to have accomplished substantially greater beating results in less time than prior installations. The Otter River Board Co., of Otter River, Mass., recently installed one of these machines with excellent results.

The English China Clay Sales Corp., announced that the SS Suuarinco with cargo of china clay for New England mills through Boston has put into Bermuda with boilers in bad order. She is not expected at Boston before late in March.

New Clay Unloading Machine at Mystic Terminal Co.

Mystic Terminal Co., subsidiary of the Boston & Maine R. R., operating the Railroad's waterfront property on Boston

The above shows Bristol's Recording Thermometers and Pressure Gauges used in connection with Sulphite Digesters.

DIGESTER TEMPERATURES

Liquor Penetration

More thorough penetration of cooking liquors is obtained when digester temperatures are raised gradually to a pre-determined degree at set intervals.

A Safe Guide to Follow

Bristol's Recording Thermometers furnish a detailed chart record showing to what extent and at just what rate digester temperatures change as the "cook" progresses.

Brings Uniform Results

Faithful observance of this record will guide the operator in securing consistently good "cooks," with the resultant uniform quality of finished pulp.

Our consulting engineers will be glad to cooperate in solving Instrument problems in your plant. Write for detailed information.

A Recording Instrument for every purpose and each one Rugged, Accurate and Dependable.

The Bristol Company Waterbury, Connecticut

FOR 38 YEARS MAKERS OF BRISTOL'S RECORDING INSTRUMENTS

Branch Offices:

Boston New York Philadelphia
Pittsburgh Birmingham Detroit
Chicago St. Louis Denver San Francisco

A New Kind of Job

for a New Style Rivet!

A Crescent Service on Dryer Felts

The head is flat, sinks beneath the surface of the felt without cutting.

The rapidly increasing use of a riveted seam in Dryer Felts has shown us a way to extend Crescent service in Paper Mills. Working in conjunction with a prominent manufacturer of Dryer Felts, we have produced a new style Crescent Rivet, which is ideal for this kind of work.

Prongs shaped so rivet can be sunk and clinched in one operation.

The prongs clinch and sink beneath the surface of the felt.

Made by the Crescent Belt Fastener Company means you are assured of satisfactory service—because a Crescent product is never offered for any work until it has been tried and proven itself better than the former best.

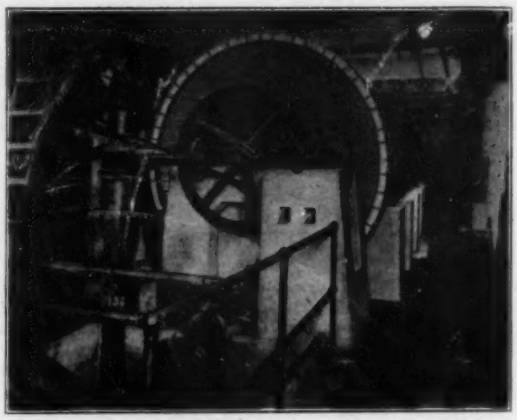
Write for Special Data on the Subject

No metal comes in contact with the paper.

CRESCENT BELT FASTENERS

Made from the same high grade materials as Crescent Rivets for belt joining purposes.

CRESCENT BELT FASTENER COMPANY, 247 PARK AVE., N. Y. C.



Paper Mill Tanks

The above installation in a well-known Ohio paper mill is only one of Hauser-Stander's successful installations.

Hauser-Stander has been building tanks for over fifty years and has particular knowledge of paper mill men's requirements.

The Hauser-Stander Tank Co.
CINCINNATI, OHIO

THE HOME OF STEEL SHELL BURRS
AND
YELLOW JACKET SHOWERS

All Products Guaranteed to Suit You

F. W. Roberts Manufacturing Company

Read the "ROBERTS IDEA"

Lockport, N. Y. **Niagara Falls, Ont.**

"Tannite" Deckle Straps for Fourdrinier Paper Machines

Represent the latest improvements. They are made to lie flat on the wire and run straight

STOWE & WOODWARD COMPANY

The Rubber Roll Makers NEWTON UPPER FALLS, MASS., U. S. A.

harbor is experimenting with new machinery to unload china clay.

Antiquated methods are pursued at all American ports unloading clay from vessel's hold to the box cars quite in contrast to the very efficient loading methods at Fowey England where all the clay originates. Diggers mechanically operated are impractical because clay does not trim.

The Mystic Terminal Co., however, is experimenting with machinery which takes clay from buckets over the vessel's hatchways, swings it directly into the box cars where it is blown into the ends of the car. Sulphur which presents similar difficulties has been successfully removed from boats in this way at the plant of the Merrimack Chemical Co.

A saving of 33% in time is indicated, as well as a substantial reduction in men required to operate. This saving would directly accrue to the paper mills. Even greater reductions in labor costs are possible, but union opposition is being felt.

All mills of the International Paper Co., at Franklin, N. H., will now be closed by order of the latest notice which has been posted. The raw material on hand will first be consumed. Operatives will be given the opportunity to secure employment at the Gatineau mills of the International Paper Co.

W. B. Clements Now at Fitchburg

W. B. Clements for the past five years superintendent of the Riverside Division of the American Writing Paper Co., has been appointed assistant superintendent of all mills of the Fitchburg Paper Co., at Fitchburg, Mass.

Mr. Clements took up his duties at Fitchburg on March 1st. From 1905 to 1915 he was connected with Crocker-McElwain Co. He has been active in the International Brotherhood of Paper Makers.

He is succeeded at the Riverside division by John R. Lyman, who has been connected with the manufacturing department of the A. W. P. Co. for three years. This follows President Willson's rule of appointing men for merit within the company. George F. Carroll has been made assistant superintendent. Both promotions were announced by General Superintendent W. L. Nixon, who has charge of the coarse mills.

The Gatti Paper Stock Corp., of 41 E. 42nd st., New York, have opened a Boston office and packing plant at 44-56 Pittsburg st., Boston, as well as 639 Main st., Holyoke. The Boston packing plant was opened by John Bartol, formerly a waste paper packer in the firm of Bartol & Healey.

Fitchburg mills consuming large quantities of waste paper have reduced old book and magazine allotments for March, which makes the second cut in tonnage within two months. The price remains firm at $1.40 delivered for uncoated, and $1.25 to $1.30 for coated paper.

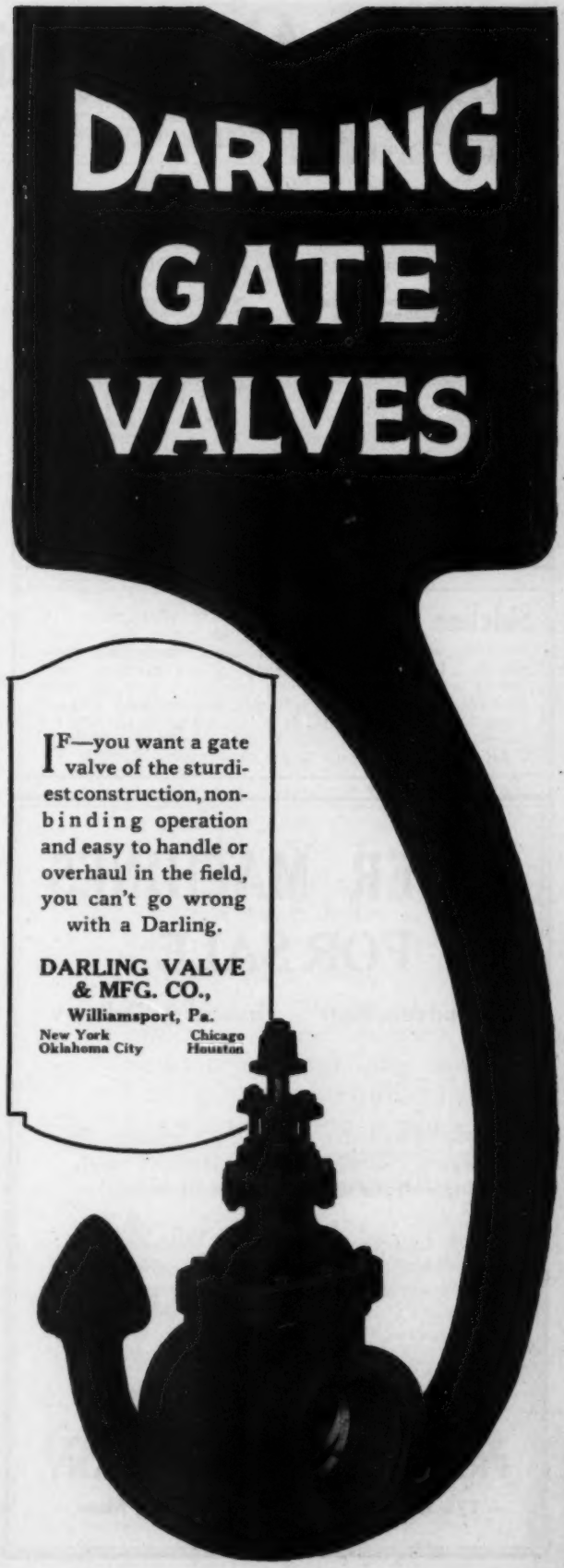
The Mars Paper Corp. has been petitioned into receivership to conserve its assets. They are manufacturers of nitrating tissue paper and are located at Westfield, Mass. Attorney J. S. Begley has been made receiver. The Mars Paper Corp. is owned by the O'Meara family of New York, proprietors of Maurice O'Meara Co., in receivership, which was the direct cause for the proceedings in this state. The Mars company has assets of $300,000 and direct lien liabilities of but $67,000, so that its liquid position is excellent.

Michael Kelly

One of the best known and most highly regarded superintendents in the Connecticut Valley, Michael Kelly, superintendent of the Crocker-McElwain Co. for 20 years died at his home in Holyoke recently. He came to this country 45 years ago and has been in the paper industry ever since. He was a director of the Connecticut Valley Division American Pulp & Paper Mill Superintendents Association.

Mr. Kelly is survived by his wife, four sons and five daughters. One son, Patrick J. Kelly, is connected with the Associate Mills.

Fire destroyed the storehouse of the Monson Waste Paper Co., of Lawrence, Mass., recently.


DARLING
GATE
VALVES
IF—you want a gate valve of the sturdiest construction, non-binding operation and easy to handle or overhaul in the field, you can't go wrong with a Darling.
DARLING VALVE & MFG. CO.,
Williamsport, Pa.
New York
Chicago
Oklahoma City
Houston

FOR SALE

Complete Equipment for a 20-Ton Sulphate Mill as follows:

1 82" Chipper with Chain Bucket Conveyor.
2 Digestors with Pumps and Heaters arranged for indirect Cooking.
6 Defuserrs.
1 Knot Catcher.
1 Two Press Rogers Wet Machine with necessary Pumps.
2 Black Liquor Tanks.
1 Smelt Furnace.
6 Causticizing Tanks with necessary Pumps.
1 Fan Blower for Furnace Work.

Everything is in good shape and nearly as good as new, for immediate delivery, reasonable price

Gibbs-Brower Co., Inc.

Paper and Pulp Mill Brokers
261 Broadway, New York City 166 W. Jackson St., Chicago
Our Motto: *"SERVICE FIRST"*

WANTED

One complete six-cylinder board machine, to trim 110 inches, with calender, cutter, winder, drive, engine, pumps, etc., to dry 50 tons daily.

One complete 110-inch Fourdrinier with calender, winder and complete with engine and drive, to dry 40 tons daily.

Four—2000-lb. beaters, one knotter, and one reciprocating chip screen. Address Box 123, The Paper Industry.

Sideline Men can make money selling our JIC liquid paste to paper bag manufacturers, paper products and paper converting companies. JIC paste is endorsed by the machine companies who make paper bag machines, and all these machines are tested out with JIC before being shipped from their factory. JIC is a big repeater. Write for samples, testimonials and terms. Address JIC DEPARTMENT, Jasmine Ink Corporation, Norfolk, Va.

FOR SALE

Used D. C. Motors from 2 to 40 H. P.
Used Large Steel Pulleys.
Large CR Shafting & Pillow Block Bearings.
One Brownell Variable Speed Twin Engine.
All in good condition

THE LOGAN-LONG COMPANY
(Paper Mill) FRANKLIN, OHIO

PAPER MACHINES FOR SALE

In good condition Immediate Delivery

One—2-cylinder machine. 2 presses; 10 dryers, 42"x84"; one calender; reel; single drum winder; marshall drive.

One Fourdrinier machine. Wire 96"x50'. 2 presses; 15 dryers, 48"x94"; one calender; reel; two drum winder; marshall drive.

By:
FRANK H. DAVIS COMPANY
175 Richdale Avenue, Cambridge, Mass.

FOR SALE—Second-hand 1200 lb. wood tub N. & W. beater. In good condition. The Noble & Wood Machine Co., Hoosick Falls, N. Y.

FOR SALE—Larger capacity installation necessitates removal two beaters, first class shape. Roll 48" x 48"; ⅛" knives; iron tub; 800 lb. capacity. Will accept any reasonable offer. Bearings in excellent shape, as rolls are only a few years old. Address Box 120, The Paper Industry.

MACHINE TENDER WANTED—Experienced machine tender for Yankee machine wanted. Machines make tissue, Kraft and Sulphite Wrapping papers and Bag paper. When writing state fully your experience. Address Box 121, The Paper Industry.

WANTED—SUPERINTENDENT—Energetic young man with experience, competent to take charge of growing specialty mill in New York State. Running cylinder and Fourdrinier machines. Good salary and bonus—a real opportunity. State your experience in full. Address Box 122, The Paper Industry.

WANTED: EXPERIENCED LABORATORY CHEMIST who within a reasonable time can take full responsibility for the operation of an up-to-date paper laboratory, making chemical, microscopical and physical tests. Technical education and experience in recognized laboratory are essential qualifications. Small salary to start, excellent future for right one. Give age, education, experience, special qualifications, dependents, present and expected salary and references in first letter. Previous correspondents invited to respond. Paper Laboratories Incorporated, 1700 Prairie Avenue, Chicago, Ill.

Two Fine Opportunities

There are two wonderful papermaking propositions ready to be developed in the South, which present opportunities to paper manufacturers who are desirous of expanding their present operations or going into new operations. Each one presents a finer opportunity for big profits than anything we have ever seen. Any man or firm who has or can secure sufficient money can get information on these propositions. Kindly address Box 118, care The Paper Industry, 356 Monadnock Bldg., Chicago, Illinois.

Important additions to mill agents were announced recently in Boston. The Champion Coated Paper Co. of Hamilton adds Cook Vivian Co., to its distributors, in the Hub. They are carrying the famous Hingefold as well as some of the uncoated papers.

Stone & Andrew Inc., Boston merchants who have been reorganized and re-incorporated have taken on the lines of Jessup & Moore Paper Co., of Wilmington, Del., and the coated papers of the Champion-International Co., of Lawrence, Mass. Stone & Andrew, Inc., now includes Thomas J. K. Parker as treasurer, formerly with Carter Rice & Co., and before that with D. L. Ward of Philadelphia.

Taking advantage of their employes' ingenuity, Bird & Son have awarded prizes for suggestions from workers on machinery improvement. The first prize was given for a suggestion that a wedge be placed between the rolls of a wallboard machine. It keeps the rolls from touching the paper while splicing, eliminating waste time, and waste board. A chain and sling suggestion for unloading cars of strawboard proved a valuable point worth $50.00 to the man who offered it, and a sheet iron plate over the tension rolls in the shoe carton department saved waste. A lining for the stuff nozzle also proved valuable to the mill and the workman who saw its possibilities.

The annual meeting of the Boston Paper Trade Association was held at the Algonquin Club of Boston on March 16th, 1927. It was the 158th regular meeting and the 41st annual gathering of the association. The speaker of the evening will be a well known Bostonian, Eliot Wadsworth, former assistant secretary of the treasury and one well qualified to discuss "War Debts," which will be the topic of the evening's discussion.

The Great Northern Paper Co. has obtained the services of a valuable technical expert in Archer L. Grover, professor of engineering at the University of Maine who has taken up his duties with the paper company this month after 30 years of service to the college. Mr. Grover is undertaking an important assignment from the Great Northern. He will supervise important lumbering operations for the Company on the headwaters of the Pleasant River.

No Increase in Salt Rates

New England paper mills, including such corporations as Brown Co., Eastern Mfg. Co., S. D. Warren Co., and Oxford Paper Co., who manufacture their bleaching agent from rock salt by the electrolytic process, are jubilant at the decision of the interstate commerce Commission which makes them victors in the battle with the railroads on increased rock salt rates. The New England mills in question will consume in the vicinity of 50,000 tons of rock salt annually. The case was handled by the New England Paper & Pulp Traffic Association, C. L. Whittemore traffic manager.

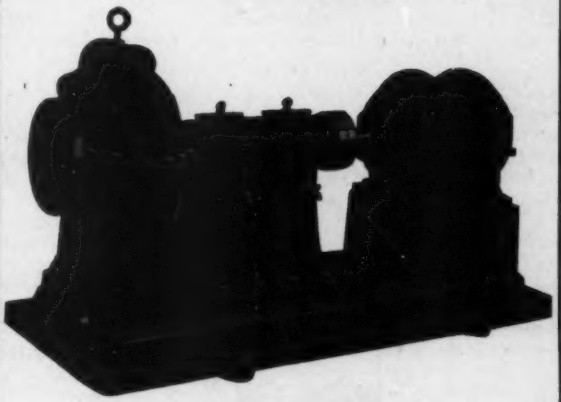
In brief the situation was as follows: The roads, led by the New York Central proposed an advance from 24c to 27c per 100 pounds on rock salt which meant an increased transportation cost to New England mills of roughly $30,000 annually. After lengthy hearings the examiner for the I. C. C. reported unfavorably for the mills and shippers, but exceptions to his report were filed and oral exceptions were heard by the full Commission.

By its decision New England is divided at the Connecticut river, east of which the rate is to be 19½c west of that territory, 22c east to Boston and including Cumberland Mills, Me. By a combination of rates it is hoped to put Bangor on a 25½c rate which would be the rate to Brunswick of 23c plus the proportional rate of 3½c beyond, instead of the 27½c maximum allowed by the I. C. C. The Grand Trunk will offer the same rate to Portland as the Boston & Maine which will automatically give Berlin, N. H. the 22c tariff and the association is sanguine of putting Rumford on the same basis. This is even less than the rates prior to the advance, and a saving of over $50,000 anually to these mills.

Frederick

Centrifugal Paper-mill

Pumps



Single-Suction Standard Paper Mill Stock Pump

¶ It is difficult, and rather unusual, for exact tests to be made of the efficiency of papermill pumps that are in actual service. Nevertheless, it is not unusual for us to be told that a *noticeably* higher efficiency has been effected, when Frederick Papermill Pumps have been installed to replace pumps of other makes. The efficiency, dependability and long life of Frederick Papermill Pumps have given them a place of virtually unquestioned leadership in the papermill field.

Every Frederick Pump is built specifically for the conditions under which it will operate, and is definitely guaranteed as to its performance under these conditions. There is a suitable type for every need of a papermill.

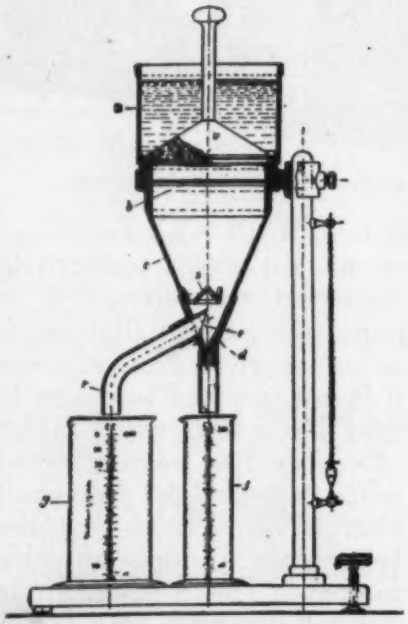
The Frederick Iron & Steel Company

Frederick, Maryland

In Canada:
Dominion Engineering Works, Ltd., Lachine, Que.

SCHOPPER
FREENESS TESTER

(PATENTED)



Schopper-Riegler Tester

"The Daddy of Them All"

The Schopper-Riegler Freeness Tester is thus denoted by a writer in THE PAPER INDUSTRY, who shows that all freeness and slowness testers are based on the Schopper-Riegler model.

It controls uniform beating. Either coarse, fine, or medium, whichever is best for the purpose. It can be operated by a boy, and does away with costly judgment, or guess work.

The Schopper-Riegler system of testing pulps for freeness or slowness is fully protected by patents and proceedings will be taken against all persons making unauthorized use of the principles or method embodied in the patent.

Use the original and get concordant results. Illustrated booklet descriptive of the Schopper-Riegler Tester will be sent on application by the sole agents—

FOREIGN PAPER MILLS, Inc.

72 Duane Street New York

Warehouses: NEW YORK—MONTREAL

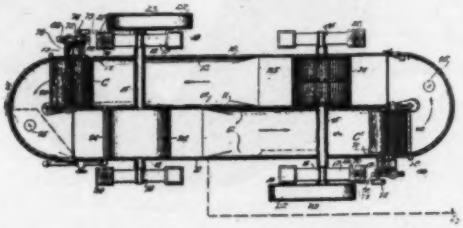
Technical Developments in the Paper Industry

Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Beating Engine

THE beating engine which is shown in the accompanying illustration consists of a tank through which the water and stock flows, and of a number of beater rolls which are



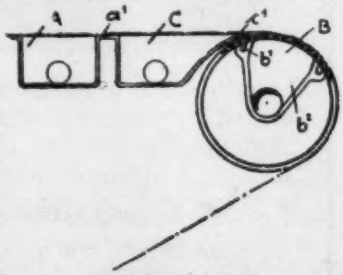
arranged in series in this tank. Each of these beater rolls is provided with its own bedplate. One of these rolls is a breaker roll and the other grinder roll. Means are also provided for continuously removing the pulp from the tank before it reaches the grinder roll. United States Patent No. 1,641,486.

Determination of Cellulose and Mechanical Pulp in Paper

ONE gram of the paper is shaken with fifty cubic centimeters of a thirty-eight per cent solution of hydrochloric acid, five cubic centimeters of concentrated sulphuric acid being added after the paper has been thoroughly soaked. The solution is shaken and allowed to remain overnight, then diluted to a volume of five hundred cubic centimeters and boiled. The lignin is collected in a porous crucible and washed and dried at a temperature of 100 degrees C. The calculation is made on the lignin values for one gram of mechanical pulp, 0.266 gram; and for one gram of sulphite cellulose, 0.030 gram. If the paper contains loading, this is determined by ignition, and a correction is made on the assumption that eighty-eight parts of ash are equivalent to one hundred parts of air dry loading. Papier Fabrikant, 1926, volume 24, page 631.

Suction Device for Fourdrinier Machine

THE device, which is shown in the accompanying illustration and which is patented in German Patent No. 436,743, has for its purpose the avoidance of the interruption of the suction effect between the suction boxes and the suction roller. Thus in the figure it is seen that between the blast suction box (A) and the suction roller (B) another suction box (C) is inserted which is joined both with the suction box (A) and the suction roll (B) by means of the surfaces (a1) and (c1). This has for its purpose the shutting out of the external air as far as possible. The surface (b1) of the suction roll (C) is made to lie tight against the surface (c1) of the suction box (C).



This arrangement then means that the passage between the last suction box and the suction roll is not broken as is the case in the usual arrangement and the suction effect lost thereby.

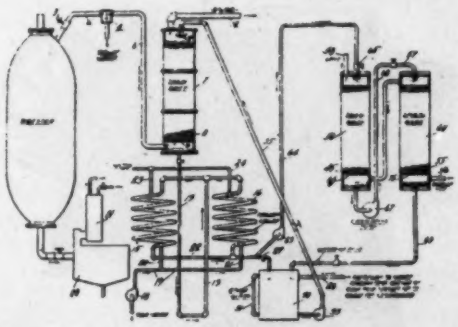
Felt Covered Press Rolls in Making Single Finished Paper

FELT covered rolls are particularly used in the manufacture of paper which is finished on one side only. The advantage lies in the fact that the felt can be changed in accordance with the special needs of the manufacturing process. The felt that is used for this purpose must be as impervious as possible. In cutting the felt from the felt roll to obtain a piece that fits around the press roll it is wise not to cut it in the direction of its length but diagonally, for only in this way can the felt be properly fitted around the press roller without there being seams which leave marks in the finished paper. Twine which has been waxed is used for fastening the felt to the roller in the place of copper or brass wires, for the reason that the twine can better withstand the variations in temperature and moisture that occur in the inside of the roll.

Further details on the exact manner in which the roll is built up with the felt, how the latter is accurately wound around it, and the like are given in the original article published in Pappers och Traevarutidskrift foer Finland, 1926, number 19.

Cooling and Utilizing Heat Content of Relief Gases

UNITED STATES Patent No. 1,616,703 is concerned with a process and apparatus, as shown, for the cooling and the utilization of the relief gases that are obtained during the



operation of the sulphite digester. A cool gas which is rich in sulphur dioxide is thus obtained. Cooling water which has been acidulated with sulphur dioxide is passed from an independent source in contact with and in countercurrent flow to hot relief gases from sulphite digesters. Sulphur dioxide is thereby liberated from the water, and steam is condensed and the sulphur dioxide of the relief gases is cooled.

New Results in Determining Half-stuff Strength

THE method which was recently introduced by Ruehlemann for the determination of the strength of the individual fibers and the one that was devised by Hoffman-Jacobsen, according to which the felting quality and the absolute fiber strength were determined by the use of the zero tearing length, have not been introduced into practical use up to the present time. It therefore appeared advisable to use the practical methods which are dependent on the making and the test of a sheet of paper from the various half-stuffs which are being investigated.

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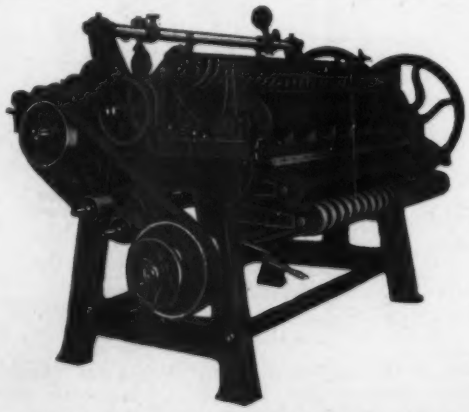

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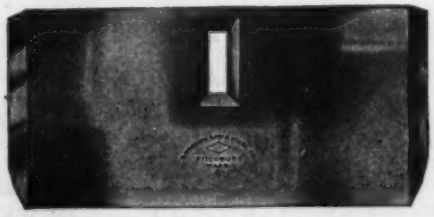

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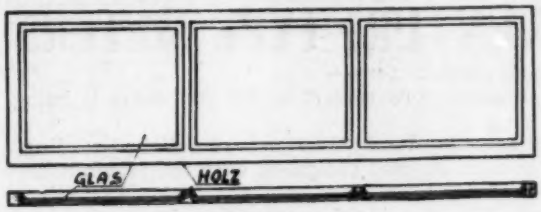
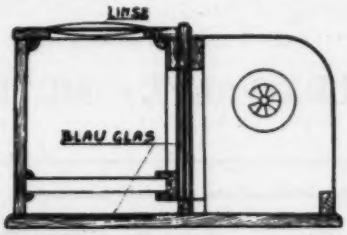
with different pulps. It must therefore be determined how the degree of beating and the strength are after a given time of beating. According to the opinion of many investigators the ball mill is best suited for regular operating control. But inasmuch as the ball mill yields only a sort of beating, then new samples of half-stuff must be beaten first in the beater to determine just what effect the beating will have on their properties. Various details concerning the methods of testing half-stuffs are given in the original article which was delivered as an address before the annual meeting of the German Pulp and Paper Chemists and Engineers, and is published in Papier Fabrikant, volume 24, pages 465-468; 481-483.

New Developments in Mechanical Wood Grinding

IN making mechanical wood pulp a wooden peep box is used for controlling the operation. This box consists of two



sections the division being made by a blue glass plate. The mechanical wood pulp, diluted with water, is brought into the various sections of this box which are made from wooden frames containing glass plates. Details of this box can be seen from the accompanying illustrations.



The article also contains a discussion of the use of magazine grinders and of the results that have been obtained with them. New barkers are also described as well as other machines used in the wood room. Time is also spent in the discussion of various types of pulp dehydrators. Zellstoff and Papier, 1926, 433.

Relation Between Constants for Degree of Beating and Bleachability in Wood Pulps and Consumption of Chlorine in Technical Bleaching

THE investigations were undertaken under the auspices of the association of Finnish engineers and were carried out in a small bleaching beater of 500 kilograms capacity. Bleaching tests were made with six different stocks from four different plants, and four of these stocks were sulphite pulp, one sulphate pulp and one an aspen sulphite pulp. The approximate chlorine consumption coefficient was known for only one of the stocks treated in the tests. The bleaching test was carried out in accordance with the method usually employed in the plant. The chlorine solution was furnished from the plant tank, and its content was tested with the aerometer. The quantity of pulp was weighed out and the dry weight of the same determined by means of a test made on a sample whose moisture content was determined. Nothing was known in the tests regarding the quality or the dry weight of the various stocks.

During the experiments the weight of the air dry stock, the quantity of the chlorine solution used and its content in active chlorine and its alkalinity were all determined. As far as the operation of the beater was concerned, the following characteristics were observed:—the level of the liquid in the beater, the temperature, the content of active chlorine in the liquor and its alkalinity. All these tests were made every half hour during the test. These figures and the figures furnished on the volumetric capacity of the beater made it possible to calculate all values on production and the like. The bleaching operation was interrupted at the proper time, the bleach liquor immediately removed from the beater and the stock washed with fresh water. The bleach pulp was separately worked up, and the finished paper stock was fed to the machine from which samples were torn from the moist paper web for further testing.

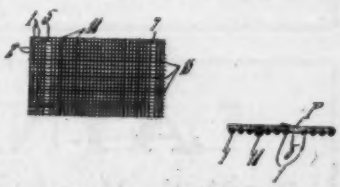
One characteristic was applied to all the bleaching tests, and that was that in no case was all the chlorine completely consumed. The consumption lay between sixty to eighty-five per cent of the amount of chlorine added. A correction must however be made for the consumption of chlorine in the washing process and the like. However, the important figure is the chlorine consumption in the actual bleaching operation for we are not concerned with the loss of chlorine values in further processing, a loss which always occurs and which must always be considered in figuring total chlorine consumption. This loss will however vary in accordance with the conditions that exist in the individual mill.

In order to determine the degree of disintegration of the stock and its bleachability before the bleaching process, the six samples of the stock taken before it was fed to the bleaching hollander were tested according to the following methods. The Roschier number, the Enso-chlorine factor (a modified Wrede method), the Tingle chlorine factor and the Bergman number were determined. The figures obtained in the Bergman test were closest to those obtained in practice, the difference being ten per cent at the utmost.

Various other determinations were carried out such as the Tingle coefficient after bleaching, the strength of the pulp before and after bleaching, the ash content, the viscosity of the pulp in solution with ammoniacal copper oxide, the whiteness of the pulp, the copper number, and the alpha cellulose content. The results showed that all the stocks were well bleached without any over-bleaching taking place. Pappers- och Traevarutidskrift foer Finland, No. 20, 1926.

Fourdrinier Wire Screen

UNITED STATES Patent No. 1,616,222 is concerned with a structure of fourdrinier wire screen, as shown in the accompanying illustration. The fourdrinier wire screen has in this case incorporated with it means for waterproofing the paper. The waterproofing portions are formed directly in the wire itself, the parts being of more open or closer mesh than the remainder of the screen.



The result is that the density of the paper made on this wire is varied at these points to a sufficient degree to watermark the paper, while at the same time this variation in the thickness of the paper is not sufficient to weaken the strength of the paper at the waterproofed portions.

Dry Distillation of Alkalized Waste Soda Liquors

COMMON practice in the dry distillation of waste soda pulp liquors has been such that it has been necessary to raise the temperature to approximately 500 degrees C, with the result that all the organic constituents of the liquor were either distilled over or coked. The time of distillation is longer under these conditions and the consumption of fuel is large. Then again the value of the products recovered did not compensate for the cost and effort put into the operation. The new process is featured by the fact that the distillation is carried out in such fashion that all these difficulties are removed or at least considerably reduced in importance.

The new process consists principally in the fact that the dry distillation is interrupted, just as soon as the valuable ingredients of the waste liquor have been distilled out of it. The retort residues are removed, which is best done after the distilling apparatus has first been allowed to cool off, with the result that chemical reaction ceases. These residuals are subjected to burning, where all the residual organic matter is burnt or coked.

This stage of the process is necessary because of the fact that it is found that a very difficult-filterable slime is obtained in the manufacture of fresh liquor from the residues which contain uncoked organic matter.

The combustion of the organic matter can be protracted to such a degree that not only the organic matter but also the carbon which remains in the retort residuals is burnt. In

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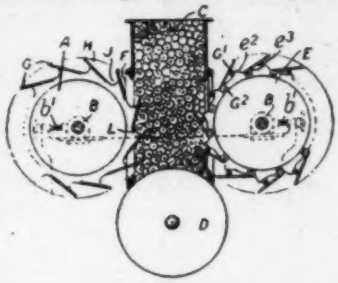
this process approximately as much heat is generated as in the direct combustion of the concentrated waste liquor with a water content of fifty per cent. The dry distillation robs the waste liquor of some of its heat value, an amount which corresponds to the thermal value of the distilled products. The heat value of the latter, however, corresponds only approximately to the quantity of heat which goes to waste, when the waste liquor is dried for direct combustion purposes. On the other hand the retort residues are quite free from water. German Patent No. 431,217.

Feeding Wood Grinders

BRITISH PATENT No. 261,058 is concerned with a process for feeding wood grinders carried out in an apparatus shown in the accompanying illustration. The rotary pressure members pass into the hopper or magazine, and compress the wood charge directly towards the grindstone. The pressure members enter beyond the lateral sides of the magazine and into the charge, and are adapted to traverse through the apparatus within the median line of the charge. As shown on the left hand side of the illustration, openings (F) are provided along the lower portion of the magazine (C) in proximity to the grindstone (D), and members or wheels (A) rotating on shafts (B), preferably at both sides of the magazine, project in the openings (F).

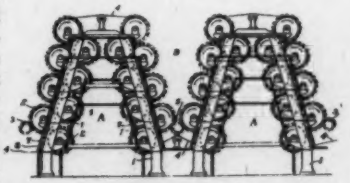


Separating or pressure members (G) inclined to the radii of the members (A) are provided on the periphery, and curved walls (J) connect the members (G) and form gaps or pockets (H) into which the long (L) of wood drop. The pressure plates (G) are so disposed that the end of a plate on one wheel is in line with the gap between two plates on the other wheel.

As shown on the right hand side of the illustration, the pressure plates (G1) are pivoted at (G2) to the wheel (E) and springs (e3) are arranged between the plates and the wheel. Abutment portions (e2) on the wheel prevent the logs from contracting with the springs; or cover plates may be provided. The shafts (B) may be adjustable by means of screwed spindles (b1).

Paper Dryer

THE illustration shows a paper dryer which is patented in United States Patent No. 1,614,694. The dryer consists of a number of sets of dryer rolls which are arranged in planes inclined upwards one toward the other comprising what might be called a unitary structure. An air area is thus formed between the rolls which make up this structure. There are two sets of these rolls and they are operated in opposite direction to each other. A paper web travels over these rolls and is dried by coming in contact with them.



Decomposition of Raw Vegetable Matter by Chlorine

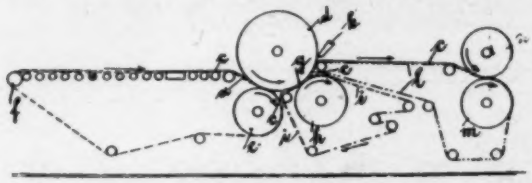
COMPARISONS are made between the actions of chlorine gas, chlorine water, and hypochlorite solution upon both pine wood meal and straw under standard conditions. With wood, the highest percentage of chlorine used and the lowest ratio of combined chlorine to hydrochloric acid produced are shown when the chlorination is carried out in carbon tetrachloride, hydrolysis under these conditions being negligible. The values are a minimum and maximum respectively, when chlorine water is employed, hydrolysis of the chlorine then being complete. With straw, chlorine gas and hypochlorite are similar in action, while chlorine differs in producing a smaller increase in the copper number and decrease in the baryta number.

Further comparison is made of the effect of these reagents upon the pentosan and lignin content and upon the yield of pure cellulose. Differences in the nature of the reactions with chlorine water and gas are ascribed to the fact that in the former case a substitution action predominates, while in the latter oxidation is the more important. Acid produced in the chlorine water process exerts a strongly hydrolyzing action on the cellulose, resulting in a smaller yield of pure cellulose. Decomposition of wood by a single chlorination is successful only if a vigorous preliminary treatment with alkali is given. On a price basis, the chlorine gas method is the most economical. Der Papierfabrikant, 1926, volume 24, pages 809-17.

Simplified Couch Roller and Wet Press

IT HAS not been possible to finish thin paper up to the present time on the so-called open machine, for it is scarcely possible to transfer the paper web from the couch roll to the first wet felt. An attempt was accordingly made to accomplish this transference of the paper into the wet part of the machine by the combination of the first wet press with the couch roll.

The illustration shows the arrangement of the new machine. The fourdrinier wire (a), carries the paper web (c) formed on it, in the usual manner, through the two couch rolls (d) and (e). The upper roll (d) is uncovered, the roller which is



located under the wire lies far back against the breast roller (f) that the roll (d) is shoved forward a certain distance in the direction of the travel of the paper web. The wet press roll (h) together with the wet felt (i) run in contact with the projecting portion (g) of the couch roll (d), pressure being exerted between them. The result is that the paper web which has already been pressed between the two couch rolls (d) and (e) and which hangs on the uncovered upper couch roll (d) is further dehydrated.

The paper web (c) hangs fast to the upper, uncovered couch roll (d) due to its extreme thinness and does not remain hanging to the continuously cleaned web felt (i) as is ordinarily the case. The air is completely removed between the upper, uncovered couch roll and the paper web by passage through the couch rolls. The result then is that the paper web remains hanging to the wet roll (d) after passage through the wet presses, and then a doctor (k) removes the paper web in an automatic manner and deposits it on the second wet felt (1). The paper web (e) passes together with the latter between the second wet press (m) and (n) and then it is transferred either automatically or by hand from this place to the drying apparatus.

Due then to the fact that the upper couch roll works together in the first place with the lower couch roll and in the second place with the press roll of the first wet press, also to the fact that its surface is not covered, as usual, but remains naked, there is obtained in addition to good pressing of the paper web an automatic transference of the paper web from the couch roll to the wet press. For the wet paper web is repelled by the wooly, constantly cleaned wet felt, but is attracted by the uncovered surface of the couch roll and remains hanging fast to it, until a doctor removes it to a second wet felt. German Patent No. 436,959.

Internal Heating of Calender Rolls, Drying Cylinders, etc.

GERMAN PATENT NO. 436,160 is concerned with an arrangement for the internal heating of cylinder driers, calender rolls and the like with the aid of volatile and particularly difficult volatile fuels, where the flames are made to burn in a comparatively narrow cylinder jacket. The purpose of the invention is first to do away with the gasifier

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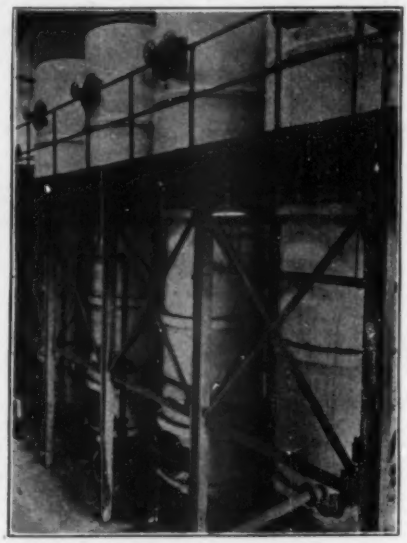

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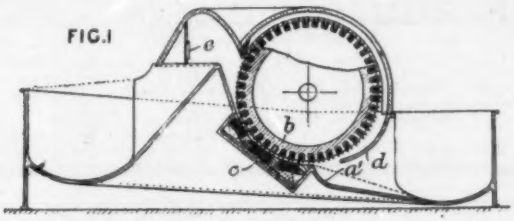
or steam boiler which has been used up to the present time and to conduct the gasification or vaporization in the heating arrangement itself, and second to avoid the frequent extinguishing of the flame which ensues in the operation of the burners that heat the boilers.

In accordance with this invention a burning tube is inserted into the cylinder jacket and the former is connected with a pipe that delivers both fuel and air, and with a tube which delivers the secondary air. The vaporizing tube, which is the first one, is heated up to a high temperature by the flames which emerge from the openings in the burner tube, and the result is that the fuel which is mixed with air in a regular mixture is completely vaporized in the vaporizing tube. This then means that the hot mixture of air and vapors, which is formed in the vaporizing tube, is burnt at the outlet of the burner tube, where it also comes into contact with the similarly highly pre-heated secondary air, and the burning takes place with the development of flame of high temperature. In order to prevent the extinguishing of the flame, the openings through which the vapor-air mixture streams are arranged somewhat tangentially to the vaporizing tube, while the openings in the air tube are so arranged that the out-streaming current of air does not come into direct contact with the burning flames.

Pulp Beaters

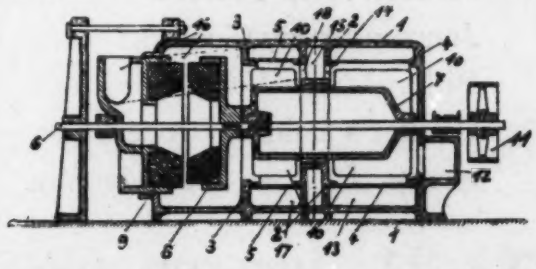
THE beating engine, which is shown in the accompanying illustration, is provided with an arcuate breast plate or shield (d) in front of the lower part of the roll (b). By this



means the pulp is kept back from the roll and the power required to drive the roll is reduced. The machine bed is dished as at (a1) to allow of the unhindered flow of pulp to the roll (b) and bedplate (c). A defector comprising one or more angle strips (e) is secured to the cover beyond the backfall. British Patent No. 261,301.

Horizontal Centrifugal Screen for Mechanical Pulp

THE mechanical wood pulp, which comes from the wood grinders, always contains a large proportion of coarse fibers which do not pass through the screen in the first screening process. These coarse fibers must be put through a grinding or rather refining process in a mill which is specially designed for this purpose and then they are again screened. A simplification of the process is introduced through the use of a centrifugal screening drum which is combined with a refining or grinding device in the same housing in such a fashion



that the course stock from the screen is carried automatically into the refining engine and then carried back again into the screen. The wood fibers which pass through the screen attain higher quality as they are further ground.

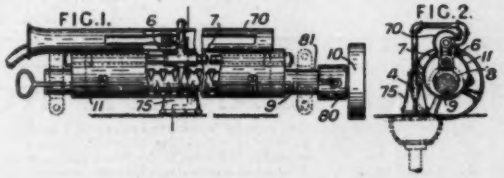
In the accompanying figure the cylindrical housing is seen at (1) and this is provided with hollow ribs (2) and an additional rib (3) which separate the interior of the apparatus into three longitudinal sections. In two of the adjacent compartments the concentric screen drums (4) and (5) are arranged. The shaft (6) is placed in the longitudinal axis of the housing, and this carries the drums (4) and (5) over its entire length as well as a grindstone at (8). This stone acts in conjunction with another stone which is stationary, shown at (9). The drum (7) is provided with vanes (10) which reach right into the inside of the screen drum (4) and (5). The hollow rib (2) is so high that it does not reach up to the circumference of the cylinder (7), so that the sections which hold the screen drums (4) and (5) are almost completely separate from one another.

The shaft (6) is driven by means of the belt pulley (11). When the shaft rotates the vanes (10) throw the paper stock which has passed into the machine through the inlet (12) into the interior of the screening drum (4) against the screen, where the fine particles of the pulp pass through and reach the annular space which is included between the screening drum and the housing and then leave the apparatus through the outlet (13). The portion of the paper stock which is not fine enough to pass through the screen (4) is then pressed through an opening (14) in the hollow space (15) of the rib (2), and from this point it eventually reaches the gutter (16) on the outer side of the housing and from this place the stock is carried to the grindstones (8) and (9).

After the stock has passed through the grindstones the ground pulp is thrown into the inside of the screening drum (5) by means of the vanes (10). The stock which has been sufficiently ground then passes through the screen (5) into the channel that surrounds the screening drum and then leaves the apparatus through the outlet (17), while that portion of the stock which has not passed through the screen is squeezed through an opening (18) in the hollow space (15) of the rib (2) and then into the passage (16) and finally to the grindstones (8) and (9). The vanes (10) are advantageously arranged in an oblique fashion on the drum (7), so that the stock after entering the machine is carried along to the openings (14) and (18) through which it is discharged. German Patent No. 435,824.

Cleaning Felts of Paper Machines

THE cleaning of felts of paper machine is effected by water from a nozzle (4) which is mounted to traverse the felt on a bar (7) and reciprocated at regular speed across the felt



by a shaft (9) on which is provided a right and left threaded screw which a member (8), attached to a cross-head (6) carrying the nozzle, engages. A clutch (80) operated by a rod (81) serves to put the driving pulley (10) of the shaft (9) in and out of action. Casings (11) and (70) enclose the mechanism, and the nozzle is mounted, as shown, to permit its adjustment to the center of travel of the felt and a vertically adjustable canopy (75) serves to prevent splashing. British Patent No. 261,584.

Major Stuart with Forest Service

Major R. Y. Stuart, former secretary of the department of forest and waters of Pennsylvania, has been appointed by secretary Jardine as head of the public relations branch of the Forest Service of the United States Department of Agriculture.

In this post he will direct the educational activities of the Forest Service for the promotion of public understanding of forestry, and, further, the co-operative work between the Forest Service and the States in carrying out the Clarke-McNary Act for forest fire protection on private and State lands, growing and distributing forest planting stock, and advice to farmers in the management of woodlands.

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New York, March 1, 1927

BUSINESS in paper of practically all classes is developing in a consistent manner and in fairly large volume. In fact, reports with rare exception say that buyers are absorbing a very large aggregate tonnage of paper, and that as a result of the excellent demand and constant movement of supplies from mills into consuming channels, paper mills are operating on a scale close to full capacity with some producing at a maximum rate.

Despite this satisfactory condition as applying to demand, the market situation is far from pleasing to a majority of paper manufacturers. The reason is that few paper mills are realizing the profit which they should in view of their big production and their steady sales to customers. Competition for orders and the never-say-die effort to corral enough business to keep mills on a full-capacity scale of production have gradually forced prices of many kinds of paper down to levels where there is not the margin of profit for manufacturers there should be. Perhaps this is the fault of the manufacturer; in fact, there appears little doubt that it is, but manufacturers say that as individuals they are powerless to combat the situation and that they are compelled to compete in order to transact business.

The statement was made by an economist speaking before the annual convention of paper manufacturers in New York that production of virtually all manufactured products would be slightly less in the United States this year than last. The speaker said he looked for no depression but that he believed there would be some recession in manufacturing output, and he based his opinion on the fact that manufacturers during 1926 went ahead and produced in excess of the limits of their consuming markets and not stopping to consider existing circumstances, and that finally they were beginning to realize it would be better to make slightly less and get a slightly better profit. This is precisely what the paper industry needs, according to many authorities in the trade. Less pressure to market paper and more gumption in adhering to quoted prices —prices which show a fair margin of profit for the producer —is what is needed to put the paper industry back on a more prosperous basis.

Production of paper in the United States in December showed a decline of 8 per cent as compared with the preceding month, following a 3 per cent decrease in November from the output in October, according to the monthly statistical summary compiled and issued by the American Paper and Pulp Association. During December mills of the country produced a total of 514,246 net tons of paper and board of all kinds, contrasted with 562,827 tons in November and 566,569 tons in October. Shipments from mills aggregated 519,908 tons during December, which was a little in excess of the production for that month, and comparing with 556,962 tons shipped in November. Mill stocks recorded a decline from a total of 231,641 net tons of all kinds of paper at the end of November to 228,275 tons at the end of December.

The December production index number for paper was 118, compared with 123 for November and 119 for December, 1925, taking 1919 at 100 per cent, according to the U. S. Department of Commerce. The monthly average for paper for 1926 was 122, contrasted with 111 for 1925, an increase of 9.9 per cent, which means paper production last year was just a trifle short of 10 per cent greater than in 1925.

Production of newsprint in the United States during January amounted to 135,755 tons and shipments from mills totaled 131,333 tons, while production in Canada was 161,724 tons and shipments 158,866 tons, according to the monthly report of the News Print Service Bureau, thus making a total United States and Canadian production of 297,479 tons and shipments of 290,199 tons. During January 17,506 tons of newsprint was made in Newfoundland and 1,112 tons in Mexico, so that the total North American production for the month was 316,097 tons. The Canadian mills produced 22,036 tons more in January, 1927, than in 1926, which was an increase of 16 per cent. The United States output was 4,248 tons, or 3 per cent, less than in January, 1926; that in Newfoundland 3,644 tons, or 26 per cent, more, and in Mexico 177 tons, or 19 per cent, more, making a total increase of 21,609 tons, or 7 per cent, over January, 1926. This would indicate that the newsprint manufacturing industry on this Continent got off to a good start toward establishing another new high mark of production during 1927.

During January the Canadian newsprint mills operated at 88.9 per cent of rated capacity, and the United States mills at 88.6 per cent. Stocks of newsprint paper at Canadian mills totaled 17,255 tons at the end of January and at U. S. mills 15,968 tons, making a combined total of 33,223 tons which was equivalent to 2.5 days' average production.

Reports tell of a steady movement of newsprint from mills into consuming channels notwithstanding the assertion that consumption in certain of the important publishing centers has dropped off slightly in the last several weeks. This decline in consumption is believed to be purely local as well as temporary and has had no visible effect on the market. Most mills are contracted up close to their capacity and are not apprehensive concerning the outlook as it is felt generally throughout the industry that consumption of print paper this year will exceed that of last year despite the high record reached in 1926.

Fine papers are enjoying a fairly active demand. There has been a noticeable improvement in this branch of the paper industry recently and most of the bond and ledger mills are reported operating at around 90 per cent and to be well supplied with orders. It is true sulphite bond mills are busier than are those featuring rag papers but the latter have experienced a gratifying increase in demand which gives promise of expanding further.

Book paper is steady quotably and is wanted in good tonnage. Most mills are producing and shipping in a consistent manner, and prices in some quarters exhibit a tendency to stiffen. Coarse papers are moving in seasonably good volume and prices are well maintained, the demand for kraft being particularly satisfactory.

Board demand gradually is broadening although consumers are proceeding carefully and are buying only to cover direct requirements. Buyers appear to lack faith in board prices, and the opinion is expressed that if a change occurs in the near future it will be downward. Therefore orders are placed only for immediately-needed supplies. Plain chip board is quoted in the East at $45 a ton for delivery in New York City and filled news board at $47.50 per ton but purchases are being effected, it is reported, at slightly below these levels.

Miss Alice Kreite, for ten years secretary to three executive secretaries of the American Paper and Pulp Association, was recently presented with a banjo clock by the Association in recognition of her faithful and efficient service.

According to Dr. Hugh P. Baker of the American Paper and Pulp Association, the aridity of the atmosphere due to modern heating systems is bad for books, as it not only dries out the bindings but affects the paper. Accordingly, the books in the New York Public Library are being given castor oil. A few drops of castor oil on a soft cloth are rubbed on the leather bindings, where formerly, neat's foot oil or lanolin was used, but Leigh H. Davey of Jersey City, president of the Binder's Board Manufacturers Association, recommended the castor oil cure and it is being tried. The oil renews the life of the leather restoring its gloss and color.

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Papermaking Rags

A somewhat novel situation has developed in papermaking rags whereby the highest-priced class of rags used by paper mills, or new cotton cuttings, have strengthened in price, and the lowest-priced class, or roofing stock, have weakened in value. The whole matter is an apt example of the workings of the law of supply and demand. Paper manufacturers in certain cases at least have been more generally in evidence as buyers of cuttings, and, with available supplies of these rags somewhat restricted and fresh supplies coming in slowly owing to low production on the part of clothing manufacturers, market prices have advanced. Demand for roofing rags—foreign stock particularly—has slowed down, and with a fairly plentiful supply of these rags to be had, values have turned easier.

The condition of the rag market, from the general standpoint, is in favor of consumers. Other than as regards certain descriptions of new rags which are comparatively scarce, buyers are succeeding in getting all the supply they presumably want at very nearly their own prices—so long as they offer within reasonable bounds. Domestic supplies appear to be coming forward in larger tonnage, especially old rags used by fine and book paper manufacturers, and roofing mill grades. Purchases of foreign rags of nearly all qualities for some time past have been of light volume, and it would seem logical to believe there are sizable accumulations in dealers' hands abroad waiting an outlet among paper mills in the United States. Moreover, the spring is approaching when collections of rags always are at their peak, and during the next few months there should be a seasonal increase in available supplies of no mean proportions.

Reports tell of fine paper mills in New England and elsewhere having increased their buying of new cuttings to a considerable degree recently, thus accounting for the stiffening of prices of such grades. Dealers ask 12 cents and higher f. o. b. shipping points for No. 1 white shirt cuttings and say they are securing this price without difficulty. Fancy shirt cuttings are reported bringing 6 cents f. o. b. dealers' points, washables 4.75 cents, blue overall cuttings 7.50 cents, black silesias 5.75 cents, bleached canton flannels 9.50 cents, and corduroy cuttings 3.75 cents. Nearly all these prices mentioned represent an uptrend in market values. Dealers put much emphasis on the small production of cuttings at present, it being stated clothing establishments are operating on a part-time basis only and therefore cutting up less cloth, and it is the contention of dealers that lower cutting prices are hardly likely so long as demand and supply keep within about prevailing dimensions.

Domestic roofing rags are holding their own in price. This appears due to a majority of felt paper mills showing preference for domestic stock over imported roofing rags. Quotations on No. 1 domestic roofing or cloth strippings range around 1.85 cents a pound f. o. b. shipping points, while No. 2 packing or satinets is reported fetching 1.50 cents. On the other hand, roofing felt manufacturers have reduced their bids on foreign roofing rags to where about all that is offered for dark colored cottons is 1.65 cents a pound ex dock New York or other American Atlantic ports, and not over 1.80 to 1.85 cents for foreign linsey garments. Importers claim they are unable to accept mill orders at these rates because they cannot cover abroad at low enough prices to show them a profit, dealers in Europe still being possessed of high price ideas and in frequent cases demanding figures in excess of those consumers here are willing to grant.

Old white cottons and blues are quiet, and prices are on the downslide. No. 1 repacked whites of New York origin are reported available at 6 to 6.50 cents a pound f. o. b. in that city though country packing of high-quality white usually is held by dealers for up around 8 cents at shipping points. Repacked thirds and blues are quoted at around 2.25 cents at dealers' points and miscellaneous blues at 1.75 cents.

Average quotations f. o. b. shipping points and ex dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	11.75-12.25
White shirt cuttings, No. 2	8.00- 8.50
Fancy shirt cuttings	6.00- 6.25
Washables, No. 1	4.75- 5.00
Unbleached muslins	10.00-10.25
White lawns	9.25- 9.50
Overall cuttings, blue	7.50- 7.75
Black silesias	5.50- 5.75
Light flannelettes	8.25- 8.50
Canton flannels, bleached	9.00- 9.50
Canton flannels, unbleached	8.00- 8.50
Shoe cuttings, bleached	9.00- 9.25
Shoe cuttings, unbleached	7.75- 8.00
Light silesias	7.25- 7.50
O. D. khaki cuttings	5.25- 5.50
Mixed khaki cuttings	4.50- 4.75
Corduroy cuttings	3.50- 3.75
Cottonade cuttings	3.75- 4.00
Linens, No. 1 white, foreign	13.00-13.50
Light prints, foreign	2.75- 3.00
Old Stock—	
Whites, No. 1 repacked	6.00- 6.50
Whites, No. 2 repacked	3.00- 3.25
Whites, house soiled	2.00- 2.25
Whites, street soiled	1.85- 2.00
Lace curtains	6.00- 6.25
Thirds and blues, rough	1.65- 1.80
Thirds and blues, repacked	2.15- 2.35
Black stockings	3.75- 4.00
Cotton canvas, No. 1	4.75- 5.00
White cotton batting	2.50- 2.75
Roofing, No. 1 (cloth stripping)	1.80- 1.85
Roofing, No. 2	1.45- 1.50
Linsey, garments, foreign	1.80- 1.85
Dark colored cottons, foreign	1.60- 1.65
Blue linens, foreign	4.00- 4.25
Gray linens, foreign	4.25- 450
White linens, foreign	8.00- 8.50
Light prints, extra, foreign	1.75- 2.00

Rope and Bagging

A strengthening tendency is observed in prices of old rope. Demand from paper mills is reported to have broadened a little, and while market values have scored no actual gain of consequence, prices seem pointed higher after having been on the easy side for some time. Dealers declare nothing like the usual quantities of old rope are coming into the market; that production fails to measure up to normal and therefore they are unable to locate as large amounts as ordinarily in the past, and it is their contention a slightly further increase in consuming demand would cause values to mount.

Domestic old No. 1 manila rope is quoted at 4.75 cents a pound at shipping points in most cases, and foreign manila at 3.75 cents ex dock New York. Frequently above these rates are asked by dealers who seem to be careful in entering selling commitments. Strings are in routine demand and steady quotably.

Old bagging is in a quiet market position. Tissue paper manufacturers are reported doing little buying, and demand from other consuming sources with the possible exception of roofing paper mills is slow. Prices are mainly nominal as the market lacks established levels of value. No. 1 scrap bagging

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is reported available at 1.75 cents a pound, and probably at less, at shipping points and roofing bagging at 1.35 cents.

F. o. b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.75-2.00
Gunny, No. 1 foreign	1.60-1.75
Scrap bagging, No. 1	1.60-1.75
Roofing bagging	1.25-1.35
Wool tares, heavy	2.00-2.25
Wool tares, light	1.75-2.00
Manila rope, No. 1 foreign	3.50-3.75
Manila rope, No. 1 domestic	4.50-4.75
Sisal strings	1.75-2.00
Mixed strings	1.10-1.25

Old Paper

The market for old paper exhibits little life of a really important character. There is a more or less routine demand for nearly all grades but supplies appear ample to take care of all the requirements of consumers, and while possibly certain grades display a little firmer price tendency, as a general thing market levels are not changing but are holding stationary at points which give dealers and packers cause for much complaint, it being their contention they cannot realize a profit at prevailing market values. This is particularly noticed in the East where prices of low grades are a bit under those existing in the Middle West on similar descriptions.

Folded news is reported selling in the East at 55 cents a hundred pounds f. o. b. New York, and No. 1 mixed paper at 45 cents, whereas in the West prices of these grades are some $2 to $3 a ton higher. Shavings are quoted around 3.35 cents a pound for No. 1 hard white, and 3 cents for soft white shavings. Books are moving in fair tonnage and at steady prices at 1.10 to 1.20 cents a pound for heavy No. 1 flat stock, and No. 1 kraft paper is selling freely on a price range of 2 to 2.20 cents per pound.

The following are quotations named by dealers f. o. b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	3.25-3.50
Hard white shavings, No. 2	3.00-3.25
Soft white shavings	2.85-3.10
Colored shavings	.90-1.00
Heavy book, No. 1	1.10-1.20
Crumpled book, No. 1	.85- .95
Ledger stock	1.40-1.65
Kraft, No. 1	2.00-2.20
Manilas, No. 1	.75- .85
White blank news	1.60-1.70
Overissue news, No. 1	.65- .75
Folded news	.55- .70
Sulphite mill wrappings	.70- .80
Mixed paper, No. 1	.45- .60
Common paper	.30- .40

Pulp Wood

The market for pulp wood exhibits a firm undertone, contract business is of fairly broad dimensions, and opinion in the trade is there is not likely to be any recession in market prices owing to the continued high cost of getting timber out of the forests. U. S. consumers are reported buying moderately freely in Canada, though viewed over a long period, it is apparent the export of pulp wood from the Dominion to the States is on the decrease. No alteration is reported in quotations.

Mechanical Pulp

There is not much demand other than of routine character arising for mechanical pulp. Consumers as a general thing appear to have their requirements taken care of and are engaging in additional buying only on a limited scale. Most domestic consumers who operate as buyers in the transient market at times are said to have been able to grind practically all the pulp they have needed this winter, being blessed with favorable weather conditions, and this, so it appears, has left some of the producers in Canada who grind for outside sales

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with supplies on their hands which they are anxious to dispose of. Consequently prices have adopted an easy tone, and sales have been recorded recently which have put market levels down a bit.

Prime spruce ground wood, freshly ground, can be bought for prompt shipment from Canadian manufacturers at $27 a ton f. o. b. pulp mills, and it is stated some purchases have been effected in far-off grinding centers down to $26 and $25 though an extra freight is involved on such pulp. Domestic ground wood is nominal in price at around $31 to $32 a ton f. o. b. pulp plants. Foreign ground wood of Scandinavian origin is quoted at around $38 a ton for dry pulp for forward shipment from abroad ex dock New York or other American Atlantic ports.

Chemical Pulp

The market for domestic chemical pulp is steady of tone and moderately active. Principal life in the market, however, has to do with shipments against contracts or back orders, with which producers seemingly are well fixed, as fresh demand is developing rather slowly. Prices are maintained, and indications are there are not likely to be any material changes over the next few months unless something unforeseen in the way of price fluctuation occurs in foreign pulp which probably would affect the domestic product.

The most popular grades of bleached sulphite are quoted at 4 cents a pound f. o. b. pulp mills and quotations range up to 4.75 cents for special qualities. No. 1 strong sulphite is quoted around 2.90 cents at producing plants, book grade sulphite at 3.50 cents, and No. 1 kraft at around 3 cents.

The United States produced a total of 2,460,378 net tons of wood pulp—mechanical and chemical—in 1926, showing an appreciable increase over the 2,292,679 tons produced in 1925, and also a gain over the 2,312,029 tons produced in 1924, according to American Paper and Pulp Association figures. Our domestic output of chemical pulp last year was 1,291,533 tons, against 1,199,992 tons in the preceding year and 1,184,284 tons in 1924, and the production of ground wood amounted to 1,168,845 tons, compared with 1,092,687 tons in 1925 and 1,127,765 tons in 1924.

Quotations f. o. b. pulp mills are as follows:

Bleached sulphite	4.00-4.75
Easy bleaching sulphite	3.20-3.40
Unbleached sulphite, No. 1 strong (news grade)	2.85-3.10
Unbleached sulphite, No. 1 book	3.25-3.50
Soda pulp, bleached	3.75-4.00
Mitscherlich, unbleached	3.25-3.50
Kraft, No. 1	2.85-3.10
Screenings, refined	1.40-1.60

Chemicals

Reports tell of a fairly brisk demand for bleaching powder and the movement of supplies both against contracts and spot commitments is in good volume. Quotations are maintained fully at 2 to 2.40 cents per pound in large drums f. o. b. works, according to quantity and shipment specified. Casein prices are holding up at around a level of 16 cents to a bit higher for foreign, and from 15.50 cents upward for the domestic product per pound in bags and in carlots. Caustic soda is quoted unchanged at 3 to 3.10 cents per pound in large drums at works, and the quotation on soda ash is steady at 1.32½ cents a pound in bags.

Average quotations are as follows:

Alum, lump ammonia	3.50- 3.75
Alum, lump starch	3.75- 4.00
Blanc fixe, powder	4.00- 4.25
Bleaching powder	2.00- 2.40
Brimstone (long ton, at mine)	18.00-19.00
Casein (duty paid)	15.50-16.50
Caustic soda, spot delivery	3.00- 3.10
China clay, domestic washed	8.00-10.00
China clay, foreign	14.00-20.00
Rosin, grade E	12.70-12.90
Satin white	2.00- 2.25
Soda ash, 50 per cent light (bags)	1.32½ ....
Starch, papermakers', in bags	3.22- ....
Talc (ton)	16.00-18.00

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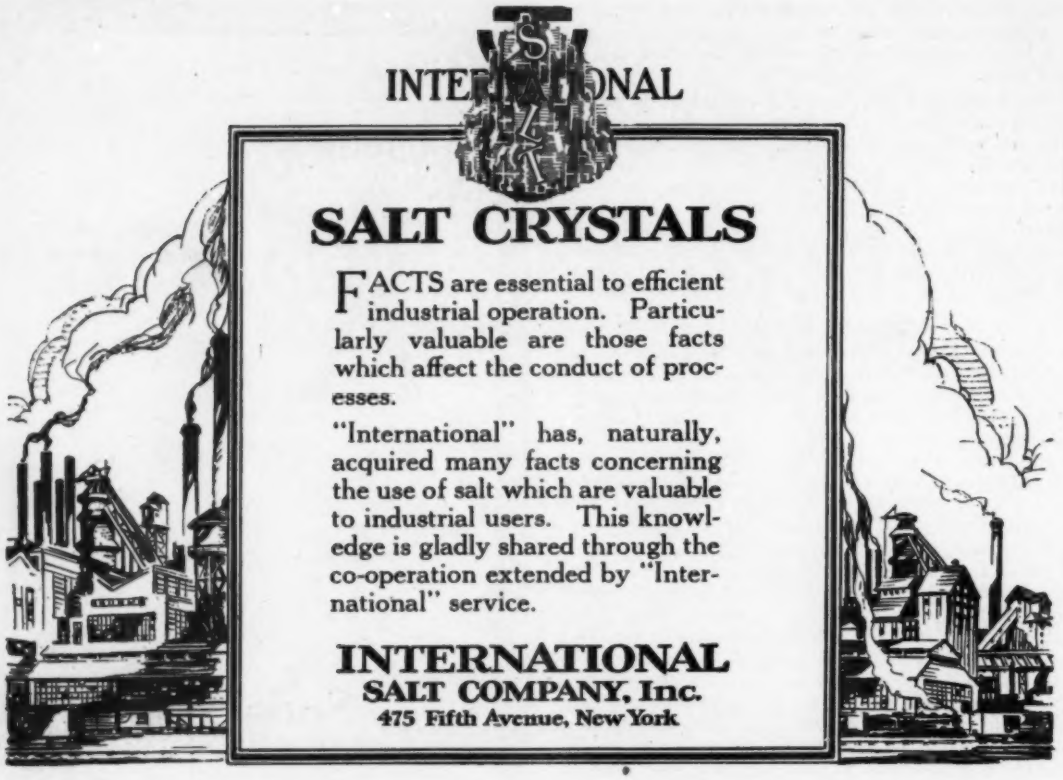
MICHIGAN ALKALI CO.

General Sales Department

21 East 40th St., New York, N. Y.

Chicago Office
332 South Michigan Ave.


INTERNATIONAL
SALT CRYSTALS
FACTS are essential to efficient industrial operation. Particularly valuable are those facts which affect the conduct of processes.
"International" has, naturally, acquired many facts concerning the use of salt which are valuable to industrial users. This knowledge is gladly shared through the co-operation extended by "International" service.
INTERNATIONAL
SALT COMPANY, Inc.
475 Fifth Avenue, New York

Six Distinct Divisions:

Sulphite Bonds and Ledgers

"K.V.P." (watermarked) Bond, Glendale Bond, Flivver Bond. Each in six colors and white. K.V.P. Ledger—Buff and White.

Ruled Paper Division

K.V.P. Fine Writings and Bonds made up into special and all standard ruled forms for school and commercial uses.

Genuine Vegetable Parchment

The best protection for marketing Dairy Products, Meats, etc., all moist and oily foods. Rolls or flat sizes to meet all needs. Printed or Plain.

Waxed Papers—*Printed or Plain*

Carton and Bread Wrappers—the "Stay Put" kind. Automatic wrapping and lining machine rolls.

KVP

Congratulations

to the

American Paper and Pulp Assn.

Fiftieth Anniversary

1878—1927

Development Division

Eternally alert for new papers for special purposes. No-Ox-Id (Rust Proof Paper). Whalehide (an indissoluble sheet of wrapping paper).

Good Housekeeping Papers

Shelf and Lining Rolls, 100 ft.—14, 20 and 28 in. wide. Household Parchment—Rolls, 100 ft. long, 12 in. wide. Heavy Waxed Paper—Rolls, 150 ft. long, 12 in. wide. Waxed and Papricloth Specialties. Klothwhite and Drug Bond for Druggist and Stationer.

Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.

New Papers

Writing—	
White rag	15-40
White sulphite	10-30
Colored rag	15-40
Colored sulphite	9-30
Ledger—	
White rag	16-40
White sulphite	11-30
Colored sulphite	10-30
Colored rag	15-40
Bonds—	
White rag	16-40
White sulphite	8-30
Colored Sulphite	8-30
Colored rag	15-40
Book—	
No. 1 S. & S. C.	6.50- 8.00
Machine finished	6.25- 8.00
English finished	6.25- 8.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	8.50-15.00
Newsprint—	
Rolls, contact	3.25- ....
Rolls, transient	3.50- ....
Sheets	3.75- 4.00
Side runs	3.00- 3.25
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.75- .85
No. 2 white, 24x36	.70- .80
No. 1 manila, 24x36	.70- 1.80
Kraft	.90- 1.00
Wrapping—	
No. 1 kraft	6.00- 6.50
No. 2 kraft	5.25- 5.50
Southern Kraft	4.75- 5.00
Boards—	New York and Chicago
Solid news	47.50-50.00
Straw	52.50-57.50
Plain chip	42.50-45.00
White coated chip	55.00-60.00
Manila coated chip	50.00-55.00
Binder's board	70.00-75.00

Favorable Court Decisions

The recent decision of the United States Customs Court of Appeals denying importers of paper from Germany the right to deduct German inland freight from the dutiable value of the paper has resulted in the first of the formal decisions by the Customs Court following the ruling of the higher court. Scores of cases have been suspended awaiting the decision from the appellate court, and formal decisions in favor of the Government may be expected in these cases as rapidly as the pending cases appear on the docket.

The Import Committee of the American Paper Industry which has been representing the American manufacturers in this matter has received announcement of the first such decision in the matter of straw wrapping paper imported through New York.

A decision has been handed down in a case originating at Cleveland in which it was held that cellulose wadding in rolls, 38 ply in thickness, was undervalued by the importer.

Importers have abandoned the following cases when they were called for trial: writing paper held by the appraiser to be subject to an additional 10 per cent duty for special finish; paper claimed by importer to be dryproof paper dutiable at ¼ cent per lb. and 10 per cent, held by appraiser to be paper not specially provided for dutiable at 30 per cent.

The report of the Import Committee of the American Paper Industry for the year ending September 30, 1926, may be obtained by addressing Warren Bullock, manager, 15 William Street, New York City.

Foreign Trade Opportunities

Additional information regarding the following foreign trade opportunities issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce may be obtained from the Bureau in Washington, D. C., or its branch offices. It is requested that the number of the inquiry be given at all times.

No. 23900—Packing paper. Sofia, Bulgaria. Purchase desired.

No. 23939—Stamping machine for scalloping crepe paper napkins. Eislingen, Germany. Purchase desired.

No. 23940—Cigarette paper, in rolls and reams. Alexandria, Egypt. Agency desired.

No. 23941—Paper-working and printing machinery. Nuremberg, Germany. Agency desired.

No. 23890—Casein. Yokohama, Japan. Agency desired.

No. 23910—Casein. Kerava, Finland. Agency desired.

No. 23990—Guillotine, paper-cutting, with electric motor. Havana, Cuba. Purchase desired.

No. 24081—Paper bags, wrapping paper, box board, and cardboard box-making materials. Santurce, Porto Rico. Purchase and agency desired.

No. 24022—Wood pulp board, unwaxed, for manufacture of milk bottle caps. London, England. Purchase desired.

No. 23992—Pasteboard-core-making machine. Eislingen, Germany. Purchase desired.

No. 24173—Bookbinding and box-covering papers, strawboard, wood pulp board and folding box board. London, England. Agency desired.

No. 24172—Nitrating sheets for the manufacture of artificial silk. Montreal, Canada. Purchase desired.

No. 24173—Paper, kraft, sulphite, grease-proof, transparent, coated enamel, flint finish, and tissues. London, England. Agency desired.

No. 24171—Paper, newsprint, wrapping and writing, and cardboard. Trieste, Italy. Purchase and agency desired.

No. 24094—Writing paper. Kuwait, Persian Gulf. Purchase and agency desired.

New Uses for Flax Straw Now Wasted

The millions of tons of flax straw wasted each year shows new uses for development. More than thirty different uses for flax fiber are enumerated by the investigators, including artificial silk, binding twine, insulating materials for ice boxes, fiber board, automobile fabrics, paper, rope, and rugs. A small portion of the flax straw produced in the United States is used for paper stock and in a few localities it is made into upholstery tow. The tow wastes made in the spinning mills are used to produce felt and paper. A product resembling cotton wool may also be made from flax tow and waste by bleaching the fiber thoroughly and reducing it to pure cellulose and then carding it.

Short waste flax fibers have been found useful in fibrous plaster and as a binder in boiler covering compositions. As flax gaskin, thick, soft twisted flax yarns are most useful to the plumber and hydraulic engineer for packing the joints of water mains. Soft dry spun yarns are used also in the manufacture of plaited engine and pump packings.

SUPERIOR

SUPERIOR CHEMICALS

TRADE MARK

ROSIN SIZE

CHEMICALS and SERVICE

The paper mills of the United States, Canada and Great Britain can now obtain SUPERIOR Rosin Size, SUPERIOR Emulsifying Equipment of the latest and most efficient design for the preparation and application of Rosin Size to paper, the assistance and cooperation of a thoroughly experienced *practical* as well as *technical* service organization from any of the companies listed below.

Other SUPERIOR product offerings

SPECIAL SIZINGS
SATIN WHITE—FOAM KILLER—FELT SOAP
PAPER FILLERS and CHINA CLAYS

PAPER MAKERS CHEMICAL CO.....Easton, Pa.; Holyoke, Mass.
WESTERN PAPER MAKERS CHEMICAL CO., Kalamazoo, Mich.
Pensacola, Fla.; Jacksonville, Fla.; Savannah, Ga.
EMPIRE SIZE & CHEMICAL CORP.....Albany, N. Y.
VERA CHEMICAL COMPANY OF CANADA, Ltd....Freeman, Ont., Can.
VERA CHEMICAL CORPORATION.....Stoneham, Mass.
VERA CHEMICAL COMPANY.....North Milwaukee, Wis.
ADIRONDACK MINERAL CO., Inc.....Carthage, N. Y.
SUPERIOR SIZING CO., Inc.....Lockport, N. Y.
POCHINS & PAPER MAKERS CHEMICALS, Ltd.Salford, Manchester, Eng.

EXPORTS

Including newsprint shipments to the value of $1,849,273, exports of paper and paper products from the United States during the year of 1926 reached a total value of $26,828,674, the highest figure attained since 1921 when aggregate exports totaled in value somewhat more than $29,000,000, according to the Paper Division of the U. S. Department of Commerce.

Compared with 1925, exports of paper and paper products last year increased 12 per cent in value, and probably somewhat more in volume since the average value of more than half of the various classifications showed a decline. Most items in the paper schedule contributed to the rise in value of the total exports, with proportionately the heaviest gains registered in shipments of boards, writing papers and surface coated papers.

Exports of newsprint in 1926 amounted to 38,517,652 pounds, valued at $1,849,273, compared with 45,476,381 pounds of a value of $2,025,153 exported in the preceding year. Exports of newsprint were chiefly to South America, China, Cuba and the Philippine Islands.

Box board exports last year totaled 52,396,919 pounds, valued at $1,500,338, against 22,482,359 pounds of a value of $796,089 in 1925, while exports of strawboard and other paper board were 40,313,371 pounds of a value of $2,029,696, contrasted with 32,375,428 pounds of a value of $1,581,421 in 1925. Exports of writing paper increased from 4,021,623 pounds, valued at $708,820, in 1925, to 10,402,956 pounds of a value of $1,661,952 last year, not including $190,561 worth of fancy writing papers exported in 1925 and $213,077 in 1926.

Wrapping paper exports last year amounted to 33,015,471 pounds, valued at $2,234,479, contrasted with 28,735,690 pounds of a value of $2,173,029 in the year before. Surface-coated paper shipments in 1926 totaled 5,903,248 pounds, valued at $744,982, against 3,802,117 pounds of a value of $561,787 in 1925. Tissue and crepe paper was exported last year to the amount of 4,400,260 pounds, valued at $1,080,131, against 3,741,770 pounds of a value of $958,483 in 1925, and toilet paper exports were 5,272,355 pounds, valued at $648,173, compared with 5,043,550 pounds of a value of $604,208 in 1925.

Book paper, not coated, was exported from the U. S. in 1926 to the amount of 18,085,094 pounds, valued at $1,721,655, contrasted with 17,347,897 pounds of a value of $1,934,630 shipped in the preceding year.

IMPORTS

Wood Pulp

The market in this country for imported wood pulp is in a waiting condition—waiting for buying interest among consumers to become more pronounced. The tone is fairly steady insofar as concerns quotations cabled from abroad on pulp for forward shipment though there is a certain degree of easiness in spot prices, due to the lack of worthwhile demand here and the fact there are some sellers who have pulp on the docks at American Atlantic ports which they are anxious to dispose of. Primary markets in Europe remain quite firm. Mills in Scandinavia are well sold up for the balance of 1927, and the present being the closed navigation season when shipments out of most parts of Sweden are difficult to effect, there is little pressure to sell on the part of Swedish manufacturers who are reported encountering a comparatively good demand from consumers in Europe and who appear satisfied to wait out the American market in the belief buying from this side will revive in good volume later on.

Most paper and board manufacturers have confined their purchases during the last month to lots of spot pulps which they have been enabled to pick up at attractively low prices. Resales have been in order, some consumers as well as importers offering spot pulp for sale at prices well below the cost of replacement abroad, and in certain instances buyers have secured supplies at very advantageous prices. This evidently is a local and temporary condition, however, and importers express the belief there will be no changes of consequence in quotations from producers abroad over the next few months, certainly not while mills in Scandinavia are in as strong a statistical position as they now are.

A new development has arisen which may have much influence on the pulp situation. A strike has been declared in Norway involving the iron miners, textile and shoe factory workers, and it is reported the employes of pulp and paper mills may be drawn into trouble. As well known, labor in Norway is organized in one big national union and when difficulties occur in some industries it is not unusual for workers in other lines to be called out on strike in sympathy with the original strikers and to help enforce the demands of the latter. It is stated that unless the strike in the three mentioned industries is settled soon it is likely the pulp and paper workers will become involved, at any rate that is the threat made.

Imports of chemical wood pulp into the United States last year broke all records, according to complete statistics just issued by the U. S. Department of Commerce. A total of 1,278,459 long tons of chemical pulp, valued at $83,229,968, was imported into this country in 1926, showing an appreciable increase over the 1,191,875 tons imported in 1925 to the value of $73,469,063, and a larger gain over the 1,142,123 tons of a value of $68,678,210 imported in 1924. Imports of ground wood into the U. S. last year amounted to 271,213 tons, valued at $8,278,220, recording a decline from the 295,618 tons of a value of $8,517,116 imported in 1925, but a gain over the 219,571 tons of a value of $7,190,129 imported in 1924.

Bleached sulphite of prime quality is quoted at 3.75 to 4 cents a pound ex dock New York for the most popular grades though quotations range from a low of about 3.65 cents all the way up to 4.25 cents, depending on quality. Strong unbleached sulphite is quoted at 2.90 to 3 cents on the dock with spot lots reported available a little under these prices, while prime Swedish kraft pulp is quoted at 2.95 to 3 cents and up to 3.10 cents for this winter's shipment from abroad, yet sales of spot prime kraft have been reported down to 2.80 cents ex dock New York. Dry ground wood is around a level of $38 per ton in price, ex dock at American Atlantic ports.

Current market quotations ex dock New York and receipts at the port of New York during February follow:

Bleached Sulphite, No. 1	3.75- 4.25
Unbleached sulphite, strong No. 1	2.85- 3.10
Unbleached sulphite No. 2	2.75- 2.90
Easy bleaching sulphite	3.20- 3.35
Mitscherlich unbleached, genuine	3.25- 3.60
Mitscherlich unbleached, ordinary	3.00- 3.15
Kraft, standard Swedish	2.90- 3.15
Ground wood, per ton (dry)	37.50-40.00

J. Andersen & Co., 675 bls. from Hamburg, 250 Gothenburg and 750 Bremen; E. J. Keller Co., 1,036 bls. from Hamburg and 723 Bremen; Johaneson, Wales & Sparre, 500 bls. from Gothenburg and 4,050 Hernosand; E. M. Sergeant Co., 2,528 bls. from Gothenburg, 4,350 Hernosand and 325 Oslo; Castle & Overton, 135 bls. from Rotterdam and 5,270 Bremen; M. Gottesman & Co., 660 bls. from Rotterdam; Robert Gair Co.,

The Product of Unceasing Vigilance

DIAMOND Quality Alkalies are indispensable products to many industries. Upon their unvarying purity and uniformity depends the successful production of millions of dollars worth of merchandise. ¶ Unceasing vigilance in maintaining the most rigid standards of purity has resulted in the nation wide acceptance and confidence that Diamond Alkalies retain. Diamond Alkalies reward your confidence.

58% Soda Ash — 76% Caustic Soda
Modified Soda — Special Alkalies
Bicarbonate of Soda

CONVENIENT WAREHOUSE STOCKS IN YOUR VICINITY

DIAMOND ALKALI COMPANY

PITTSBURGH ALKALI PENNSYLVANIA

MITTS & MERRILL GRAVITY FEED SHREDDER

Reduces Paper Stock

Magazines, books, old paper and boxboard, frozen or dried pulp laps run through the Mitts & Merrill Gravity Feed Shredder are reduced to particles which hydrate readily when put into the beaters.

Built in six sizes with spouts ranging from 18" to 45" wide

Reduces Costs

Because shredding in the Mitts & Merrill Gravity Feed Shredder expedites hydration in the beaters there is considerable saving made in power. Thus we see that the shredder here illustrated reduces costs while it is reducing paper stock.

We will be glad to furnish details upon request.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse

See pages 372 and 373 in the 1926 Paper and Pulp Mill Catalogue

MITTS & MERRILL 1013 Tilden St. SAGINAW, MICH.

9,283 bls. from Liverpool, N. S.; Bulkley, Dunton & Co., 3,000 bls. from Hernosand, 16,640 Stugsund, 2,625 Bremen and 800 Rotterdam; National City Bank, 150 bls. from Hernosand; Pagel, Horton & Co., 4,800 bls. from Ornskoldsvik; Scandinavian Pulp Agency, 11,500 bls. from Sundsvall; Central Union Trust Co., 200 bls. from Oslo; Chemical National Bank, 900 bls. from Oslo; Buck, Kiaer & Co., 2,400 bls. from Oslo; Central National Bank, 2,500 bls. from Halmstad and 1,570 Hamburg; American Exchange Irving Trust Co., 400 bls. from Bremen; Perkins-Goodwin Co., 250 bls. from Oslo; Order, 1,150 bls. from Bremen, 927 Hamburg, 4,246 Kotka and 1,032 Hernosand.

Paper Stock

Official statistics just released by the U. S. department of Commerce show that importations of papermaking rags into the United States in 1926 totaled 476,764,483 pounds, valued at $10,372,689, compared with 572,431,511 pounds of a value of $15,828,320 imported in the preceding year. Imports of waste bagging and waste paper last year amounted to 113,322,087 pounds, valued at $2,394,680, against 128,871,569 pounds of a value of $2,274,403 in 1925, while imports of old rope and miscellaneous paper stock in 1926 reached a total of 79,035,894 pounds, valued at $3,074,995, contrasted with 71,198,576 pounds of a value of $3,576,230 in 1925.

Imports of papermaking materials appeared to drop off somewhat during February, judging from arrivals through the port of New York in that month. Importations of all kinds of paper stock other than wood pulp at New York in the month of February, 1927, these data being taken from manifests of steamers reaching that port during the month, follow:

Old Rope

Brown Bros. & Co., 110 bls. and 212 coils; Ellerman's Wilson Line, 180 coils; Salomon Bros. & Co., 22 bls.; E. J. Keller Co., 123 bls.; United Fruit Co., 6 bls.; S. Birkenstein & Sons, 43 coils; William Steck & Co., 36 coils; N. E. Berzen, 116 rolls.

Old Bagging

Castle & Overton, 97 bls.; National City Bank, 169 bls.; L. H. Abenheimer, 200 bls.; Daniel M. Hicks, Inc., 80 bls.; W. Schall & Co., 45 bls.; Chemical National Bank, 198 bls.; E. J. Keller Co., 765 bls.; Order, 131 bls.

Rags

E. A. Stone Co., 1,514 bls.; Castle & Overton, 890 bls.; Darmstadt, Scott & Courtney, 74 bls.; Albion Trading Co., 27 bls.; I. Hinerfeld, 17 bls.; M. Silver & Co., 8 bls.; S. Silberman Co., 296 bls.; A. Hunt & Co., 40 bls.; Robert Bishop Mfg. Co., 356 bls.; Salomon Bros. & Co., 69 bls.; J. Cohen & Son Co., 20 bls.; Levy Bros., 43 bls.; Fritz Stern, 28 bls.; Paul Berlowitz, 600 bls.; George M. Graves Co., 55 bls.; American Wool Stock Co., 408 bls.; Robert Blank, 43 bls.; Victor Galaup, Inc., 53 bls.; Maurice Frank, 60 bls.; E. J. Keller Co., 2,142 bls.; Chase National Bank, 839 bls.; Equitable Trust Co., 401 bls.; Chemical National Bank, 32 bls.; National City Bank, 166 bls.; National Bank of Commerce, 145 bls.; Central Mercantile Bank, 55 bls.; American Exchange Irving Trust Co., 117 bls.; Banca Commerciale Trust Co., 7 bls.; Central National Bank of Savings and Trust Co., 38 bls.; Royal Bank of Canada, 65 bls.; The Barrett Co., 52 bls.; International Mercantile Marine Co., 34 bls.; C. B. Richard & Co., 111 bls.; Amsinck, Sonne & Co., 370 bls.; Goldman, Sachs & Co., 952 Bls.; A. W. Fenton, Inc., 455 bls.; Brown Bros. & Co., 76 bls.; W. Schall & Co., 73 bls.; American Express Co., 67 bls.; C. R. Spence & Co., 752 bls.; Order, 1,769 bls.

Miscellaneous Paper Stock

Whaling Waste Products Co., 538 bls.; Hughes-Fawcett Co., 207 bls.; American Merchant Lines, 148 bls.; W. Schall & Co., 23 bls.; C. R. Spence & Co., 42 bls.; Brown Bros. & Co., 23 bls.; Equitable Trust Co., 83 bls.; Atlantic Transport Line, 37 bls.; J. Cohen & Son Co., 47 bls.; E. Butterworth & Co., 472 bls.; Milton Snedeker Corp., 61 bls.; Salomon Bros. & Co., 146 bls.; H. J. Reed, 132 bls.; H. W. Peabody & Co., 65 bls.; E. J. Keller Co., 421 bls.; Order, 86 bls.

Paper

Imports of paper into the United States in the calendar year

The B Co. INC.
QUALITY PULPS
"HAFSLUND BEAR"
Bleached Sulphite
"FORSHAGA"
Bleached Sulphite
"HURUM SPECIAL"
Extra Strong Kraft
"BAMBLE"
Extra Strong Kraft
The Borregaard Company
200 Fifth Ave. Incorporated New York, N.Y.

The Pulp and Paper Trading Co.
21 East 40th Street New York City
DEALERS IN DOMESTIC CHEMICAL AND MECHANICAL PULPS AND PAPER
AGENTS FOR
J. & J. Rogers Company, Ausable Forks, N. Y.
E. B. Eddy Company, Ltd., Hull, Canada
Canadian Kraft Limited, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp
Howard Smith Paper Mills, Montreal, Quebec
EASTERN AGENTS of Sulphite Pulp. Made by Port Huron Sulphite & Paper Co., Port Huron, Mich.

J. ANDERSEN & CO.
21 East 40th Street New York City
Importers of Chemical Pulps
BLEACHED AND UNBLEACHED
Agents for Kellner Partington Paper Pulp Co., Ltd.
Sarpsborg, Norway; Forshaga, and Edsvalla, Sweden

PAPER MILLS SUPPLY CO.

Kalamazoo, Michigan

Western Representatives
THE KALBFLEISCH CORPORATION
New York

Clay, Casein, Alum, Satin White
Rosin Size

GOOD RAGS FOR PAPER MILLS NEW CUTTINGS

The Leshner Paper Stock Co.
INCORPORATED

Hamilton, Ohio

Branch—Cleveland, Ohio

JOSEPH GATTI President and Treasurer

GATTI Paper Stock Corporation
Formerly with the Gatti-McQuade Co.

Paper Manufacturers' Supplies

COTTON AND WOOLEN WASTE

All Grades of Rags and Paper Stock, New Wrapping Paper, Box Board and Cordage

Main Office
41 East 42nd St., New York
Liggett Bldg.

Packing House
13th and Monroe Sts.
Hoboken, N. J.

RUSS GELATIN CO.
WORKS—WESTFIELD, MASS.

MANUFACTURERS OF

GELATIN and GLUE
ANIMAL SIZING GLUE STOCK

LARGEST SPECIALISTS IN AMERICA ON
FINE WRITING PAPER SIZING

E. F. RUSS COMPANY 287 Atlantic Avenue BOSTON, U. S. A.

1926 showed an appreciable gain in value, amounting to a total of $139,537,144, over the imports in 1925 which reached a total of $119,200,611, according to official figures issued by the U. S. Department of Commerce. The great bulk of these imports, of course, consisted of newsprint, our 1926 imports of this class of paper amounting to 3,701,350,149 pounds, valued at $123,981,715, contrasted with 2,986,850,378 pounds of a value of $103,717,055 imported in 1925. Canada supplied 3,313,717,595 pounds, valued at $111,924,211, of the newsprint imported into the U. S. last year.

Kraft wrapping imports in 1926 totaled 8,867,689 pounds, valued at $390,958, compared with 14,419,611 pounds of a value of $605,666 imported in the preceding year, and other wrapping paper imports were 5,556,310 pounds of a value of $366,687 last year, against 5,550,040 pounds of a value of $269,737 in 1925.

Paper importations during February were about normal, judging from unofficial figures of arrivals at the port of New York. Imports of paper of all kinds through the port of New York last month, these data being taken from manifests of steamers reaching that port, follow:

Printing

H. Reeve Angel & Co., 14 reels from Gothenburg; Journal of Commerce, 245 reels from Bremen; Ossian Bay, 78 reels from Gothenburg; Guaranty Trust Co., 323 rolls from Oslo; Perry, Ryer & Co., 68 cs. from Glasgow; Parsons & Whittemore, 210 rolls from Hernosand and 680 reels from Bremen; Steiner Paper Corp., 120 cs. from Rotterdam; P. Puttmann, 5 cs. from Antwerp; Oxford University Press, 5 cs. from Liverpool; Keuffel & Esser Co., 57 rolls from Hamburg; F. Henjes, Jr., 123 reels from Hamburg; C. B. Richard & Co., 45 cs. from Hamburg; A. S. Zabriskie, 131 reels from Bremen; W. Hartmann & Co., 298 bls. from Hamburg; Perkins-Goodwin Co., 63 reels from Hamburg; Order, 158 cs. from Hamburg and 789 reels from Bremen.

Wrapping

Arkell Safety Bag Co., 197 reels and 30 bls. from Gothenburg; Wilkinson Bros. & Co., 34 bls. from Gothenburg; Thomas Barrett & Son, 53 bls. from Gothenburg; C. K. MacAlpine & Co., 55 bls. and 20 reels from Gothenburg; Insight Paper Co., 899 reels from Oslo; Borregaard Co., 57 bls. and 60 rolls from Gothenburg; E. Dietzgen & Co., 6 cs. from Antwerp; F. C. Strype, 15 pkgs. from Antwerp; Fidelity International Trust Co., 538 rolls from Hamburg; National Consumers Paper Co., 5 bls. from Rotterdam and 14 bls. from Hamburg; Rohner, Gehrig & Co., 20 pkgs. from Hamburg; C. Steiner, 17 pkgs. from Hamburg; International Forwarding Co., 31 bls. from Hamburg; Bendix Paper Co., 12 cs. from Hamburg; Armour & Co., 69 reels from Hamburg; Order 51 bls. from Gothenburg and 6 cs. from Rotterdam.

Cigarette

American Tobacco Co., 1,000 cs. from Bordeaux; R. J. Reynolds Tobacco Co., 1,000 cs. from St. Nazaire and 400 cs. from Havre; Demanduit Paper Corp., 474 cs. from St. Nazaire; M. Spiegel & Son, 12 cs. from Bordeaux; P. J. Schweitzer, Inc., 127 cs. from Marseilles; Standard Products Corp., 481 cs. from Havre; Surburg Co., 15 cs. from Havre; Southern Pacific Lines, 3 cs. from Havre.

Drawing

P. Puttmann, 9 cs. from Antwerp; H. Reeve Angel & Co., 2 cs. from London; Keuffel & Esser Co., 82 cs. from Hamburg.

Filter

C. G. Euler, 23 bls. from Bordeaux; A. Giese & Son, 20 cs. from Bordeaux and 19 cs. from Hamburg; H. Reeve Angel & Co., 23 pkgs. from Southampton and 24 cs. from London; E. Fougera & Co., 60 cs. from Southampton; J. Manheimer, 131 bls. from Southampton; C. Schleicher & Schull Co., 8 cs. from Hamburg.

Writing

Globe Shipping Co., 4 cs. from Havre; Guibont Freres & Co., 5 cs. from Havre; F. H. Loeser, 2 cs. from Havre; Gallagher & Ascher, 9 cs. from London; Hoole Service Co., 4 cs. from Havre.

Starch

ECONOMY can never be mistaken for cheapness. In the matter of sizing material, starch is cheaper than an all-glue size, yet the results are identical—in fact, the paper made with starch sizing is stronger.

FOX HEAD NIAGARA SPECIAL PAPER

Our experts can show you how these starches can be used advantageously in your mill. They will gladly call on request.

Corn Products Refining Company
17 Battery Place New York

Starch

CHENEY
Pulp and Paper Co.
FRANKLIN, OHIO

Manufacturers of All Grades

Rag Pulp
and
Jute Pulp
***for* Paper Mills**

SAMPLES and PRICES
SUBMITTED UPON REQUEST

Morey Paper Vulcan TRADE MARK **Mill Supply Co.**

99 CHAUNCY St. BOSTON, MASS.

SOLE SELLING AGENTS

"LAMBETH" COTTON TRANSMISSION ROPE
and EGYPTIAN COTTON ROPE FOR SHEAHAN CARRIERS
Careful, Intelligent, Quick Service

Remember

WM. A. HARDY & SONS
FITCHBURG, MASS.

Originators and Oldest Manufacturers
OF THE
Cast Bronze Screen Plate

ALSO SPECIALIZE IN
Acid Resisting Digester Parts

Ham Feltz sez:

"Noah Webster invented about 250,000 words to put in his dictionary but he didn't invent any as will tell about the way Hamilton Felts suck out the water like a Jersey mosquito sucks blood, go easy on the coal pile, speed up the output, and pile up the profits that make it easy for the boss to get along with the stockholders. You've got to experience that for yourself."

Hamilton Felts

UNION SCREEN PLATE CO.
Fitchburg, Mass., U. S. A. Lennoxville, P. Q., Canada

UNION BRONZE SCREEN PLATES
(Best phosphorized Cast Metal)

Old Plates RECLOSED and RECUT to accurate gauge
UNION BRONZE SCREWS for Screen Plates
Immediate Delivery of the Largest Orders. Satisfaction Guaranteed

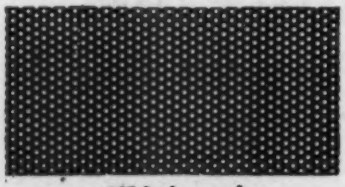
The Witham Screen Plate Fastener, Patented
THE ORIGINAL THE BEST

SCREEN PLATES *and* DANDY ROLLS

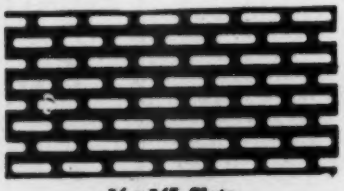
Watermarking a Specialty

Central Manufacturing Co.
The Quick Service House
KALAMAZOO MICHIGAN

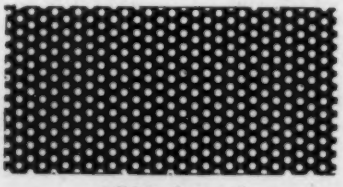
Perforated Metal Screens for Pulp and Paper Mills



.065 inch round



⅛ x ¾" Slots



3/32 inch round

Steel, Copper, Brass, Bronze and other alloys punched for Centrifugal and Rotary Screens, Pulp Washers, Drainer Bottoms, Filter Plates, etc.

CHARLES MUNDT & SONS **57-65 Fairmount Avenue, Jersey City, N. J.**

Tissue

J. C. Robold & Co., 10 cs. from Liverpool; F. C. Strype, 23 cs. from Liverpool; J. M. MacDonald & Co., 3 cs. from Kobe; Schenkers, Inc., 40 cs. from Hamburg.

Hanging

F. J. Emmerich & Co., 30 bls. from Liverpool, 4 bls. Southampton and 43 bls. Hamburg; A. C. Dodman, Jr., 44 pkgs. from Liverpool and 12 pkgs. from Southampton; R. F. Downing & Co., 43 pkgs. from London; C. A. Haynes & Co., 141 pkgs. from London and 6 pkgs. from Liverpool; W. H. S. Lloyd & Co., 7 bls. from Liverpool; Panama-Pacific Line, 4 bls. from London; J. E. Bernard & Co., 32 pkgs. from Antwerp; F. A. Binder, 18 bls. from Bremen; A. B. Scott, 4, cs. from Liverpool; K. D. Peper, 11 cs. from Southampton; Gallagher & Ascher, 17 pkgs. from Hamburg.

Photo

P. C. Zuhlke, 11 cs. from Antwerp; Gevaert Co. of America, 273 cs. from Antwerp; Globe Shipping Co., 240 cs. from Bremen and 96 cs. from Hamburg; G. Gennert, Inc., 31 cs. from Havre; Order, 100 cs. from Antwerp.

Board

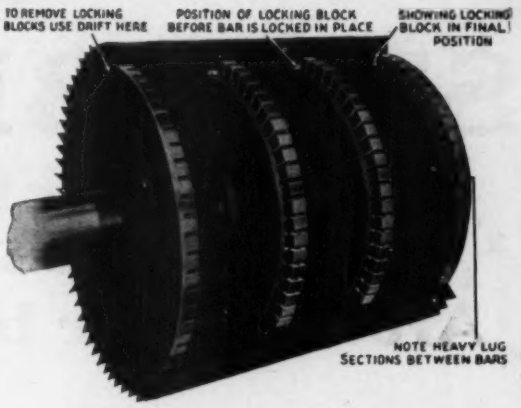
Brooks Paper Co., 5 cs. from Liverpool; Maxwell Brown Paper Co., 4 bls. from Gothenburg; Haas Bros., 112 reels from Rotterdam; Adrian Vuyck, 1,223 reels from Rotterdam; A. B. Massa Paper Corp., 300 pkgs. from Rotterdam; J. P. Heffernan Paper Co., 186 reels from Rotterdam; Perkins-Goodwin Co., 680 rolls from Rotterdam; Grand Corrugated Paper Co., 102 reels from Rotterdam; H. H. Ayer, 8 cs. from Havre; Globe Shipping Co., 156 bls. from Hamburg; Order, 45 cs. from Antwerp.

Miscellaneous

Whiting-Patterson Co., 36 cs. from Southampton and 18 cs. from Hamburg; Keller-Dorian Paper Co., 24 cs. from Southampton; Albemarle Paper Mfg. Co., 5 cs. from Gothenburg; Richard Shipping Corp., 9 cs. from Bremen; Eleto Co., 8 cs. from Havre; A. Ferier, 4 cs. from Havre; Bank of the Manhattan Co., 21 cs. from Havre; Burroughs, Welcome & Co., 3 bls. from London; Whitfield Paper Works, 25 cs. from Kobe; Cameo Paper and Twine Co., 5 cs. from Kobe; Japan Paper Co., 18 cs. from Genoa and 9 cs. from Havre; International Acceptance Bank, 65 bls. from Rotterdam; F. C. Strype, 26 cs. from Rotterdam and 142 cs. from Hamburg; Peerless Roll Leaf Co., 21 cs. from Rotterdam; C. Kofler & Co., 6 cs. from Antwerp; F. Murray Hill Co., 10 cs. from Bremen; F. L. Kraemer & Co., 26 cs. from Bremen; W. J. Byrnes & Co., 6 cs. from Liverpool; International Forwarding Co., 8 cs. from Hamburg; Louis DeJonge & Co., 20 cs. from Hamburg; P. H. Petry & Co., 18 cs. from Hamburg and 10 cs. from Rotterdam; Van Oppen & Co., 3 pkgs. from Rotterdam; Causon & Montgolfer, 33 cs. from Havre; Tamm & Co., 7 cs. from Hamburg; D. C. Andrews & Co., 49 bls. from Hamburg.

The International Combustion Engineering Corp., has obtained the Heine Boiler Co., one of the oldest and leading water-tube boiler manufacturers in the United States, enabling it to have large boiler shop facilities in St. Louis, Mo., and Phoenixville, Pa. All types of water-tube boilers, including the new Sinuous Header type recently placed on the market, will be centered at the St. Louis plant, and this acquisition enables the company to place a complete line of steam generating units fired with pulverized fuel or mechanical stokers. C. R. D. Meier will remain president of the Heine Boiler Co.

The Forestry Primer, published by the American Tree Ass'n., of Washington, D. C., is probably the most widely distributed educational book on forestry. The Primer was sent out to mark the semi-centennial of the first step in forestry taken by the United States Government. In 1876, Dr. Franklin B. Hough was appointed a special agent to inquire into the forestry conditions in this country, and the Forestry Primer memorializes this event. It contains 14 lessons with an original drawing to illustrate each lesson. It also presents a resume of recent editorial opinions regarding the necessity for an adequate forestry policy in this country.


TO REMOVE LOCKING BLOCKS USE DRIFT HERE
POSITION OF LOCKING BLOCK BEFORE BAR IS LOCKED IN PLACE
SHOWING LOCKING BLOCK IN FINAL POSITION
NOTE HEAVY LUG SECTIONS BETWEEN BARS

DAYTON

High Speed Beaters

are used Successfully in mills making the many grades of papers listed below.

Rag Bonds
Book-writing
Container Board
Book-mimeo
Book-cover-writing
Bristol—RR Board
Straw-Chip Board
Asbestos
Book-Magazine
Book-bristols
Cont. Bd-Kraft
Tissue
Kraft
Sulphite Bonds
Book
Book-tablet
Cement-flour
W. L. Parchment
Straw
Bonds-Ledgers
Covers-writing
Jute specialties
Specialties
Wall board
Rope
Comb. Board-Chip

Among the Benefits Derived Are:

Heavier Furnishes
Faster Beating
Greater Output
More Uniform Product
Saving in Power
Saving in Labor

Investigate Now

We Rest Our Case on Performance

D B & H

The Dayton Beater & Hoist Co.

Dayton, Ohio

STEBBINS

DIGESTER LININGS

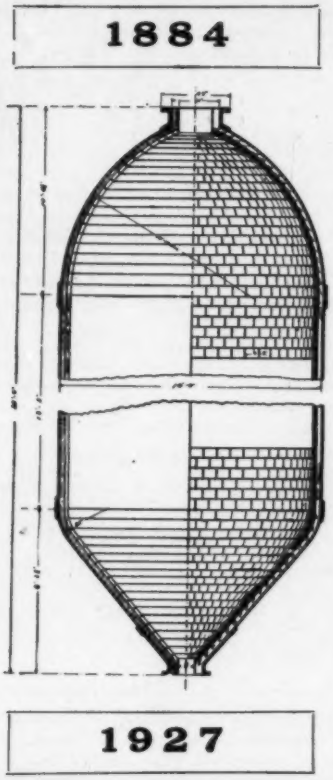
Are Superior by Test

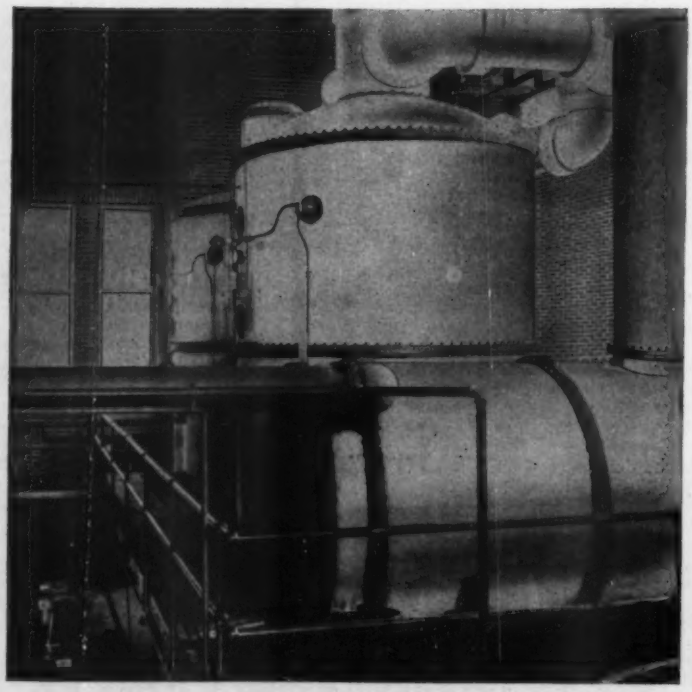
Ask 80 Companies Now Using Them

Manufactured and Installed Solely by

Stebbins Engineering & Mfg. Co.

Watertown, New York





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DOUBLE EFFECT

EVAPORATOR

RECENTLY INSTALLED
IN THE PLANT
OF
RIORDAN PULP CORPORATION
TEMISKAMING, QUEBEC

ZAREMBA COMPANY
506 Crosby Bldg. Buffalo, N. Y.
New York City Office: 95 Liberty St.

Catalogues, Booklets, Etc.

Brown Instrument Co., Philadelphia, Pa.—Catalogue No. 33 describes the application of the thermal-conductivity method of CO_2 measurement, and bears the title of "Brown Electric CO_2 Meters." It covers the relation of furnace operating economy to CO_2 flue gas, followed by explanation of Brown Electric CO_2 meter operating principle, design and advantages, with descriptions and illustrations of indicating and recording models.

No. 75, called "Brown Recording Pressure and Vacuum Gauges," is a revision of the old edition, and features all types of round case instruments, in addition to single, duplex, multiple, and multiple-duplex record models of strip-chart pressure recorders.

Foote Bros. Gear & Machine Co., Chicago, Ill.—No. 300 is a bright-colored catalogue describing their new "Hygrade" type of worm gear speed reducers, recently put on the market. Plenty of charts of interest to the man thinking of installation.

T. B. Woods Sons Co., Chambersburg, Pa.—A handsomely bound red book entitled "Power Transmission Machinery," has come from this concern. It should be a valuable aid in the indexing of power transmission machinery and appliances, as all kinds of data and formulae are in the book to assist the users of power in determining proper sizes, styles and designs of appliances best suited to their individual needs. It is numbered 70, because it marks the seventieth anniversary of this organization in the manufacture of this one line of products. Catalogue No. 70 is a worthy addition to your equipment catalogues.

Book Reviews

The Chemistry of Wood, By Hawley and Wise—

Published by The Chemical Catalogue Co. Inc., New York City; Price $6.00; to A. C. S. members $5.40.

This 334 paged volume is a contribution in the field of wood chemistry, from none other than L. F. Hawley, senior chemist of the Forest Products Laboratory, Madison, Wis., and Louis E. Wise, professor of forest chemistry at the New York State College of Forestry, Syracuse University.

Dealing thoroughly with the chemical components of wood; the proximate and summative analysis of wood and the technical significance of such data; the chemistry of the decomposition of wood by heat and by chemical liquors, and the industrial utilization of wood, together with accurate illustrations, it should be a welcome addition in the Chemist's library of noteworthy units of the monograph series.

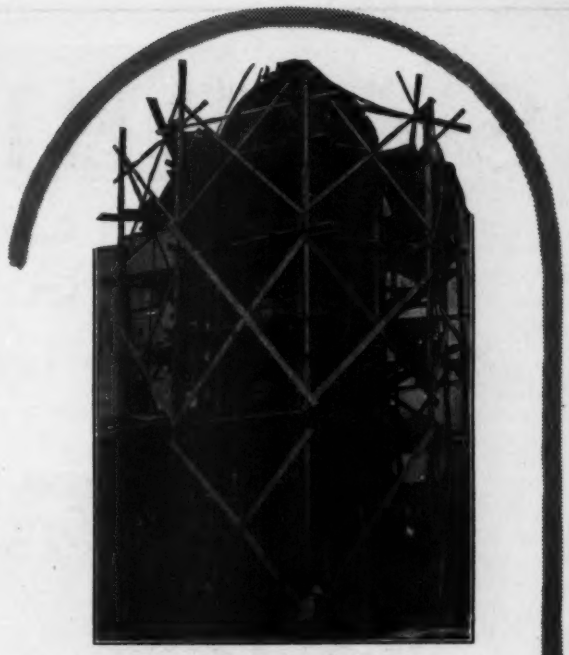
Patents (What a Business Executive Should Know About Patents), by Roger Sherman Hoar, M. A., LL. B.—

Published by The Ronald Press Co., New York City; Price $4.50.

With questions arising every day in the paper industry, concerning the proper procedure for obtaining patents, avoiding litigations and infringements, and the like, this practical volume of 232 pages, on patent tactics, couched in a simple, everyday language, should appeal to the business man and executive, anxious for a working knowledge of this important phase of protecting his product.

It explains in detail, legal papers and forms for contracts that are necessary in patent practice, and gives a thorough explanation of patent tactics, permitting more accurate decision in this phase of legal action.

Statements from the Forest Service show that 10 percent of the northeastern forests are so heavily blanketed with slash after spruce and fir have been cut out for pulpwood that seedlings of the new forest cannot grow, and they point out the necessity of burning this debris at safe seasons. Forest conditions in the future will be unsatisfactory unless this disposition is made. Burning slash, however, must be conducted to avoid the serious harm that may follow a broadcast burn. Winter burning as logging proceeds is the safest method. Fire damage to seedlings, young growth, and unmerchantable trees will be held to a minimum if the fire is started and fed with slash from the trees cut nearby, new fires being started as the cutting moves on.



Service is "Built-in"

Manitowoc Equipment is "built" every inch. From the time the drawings are made until the last bolt is riveted.

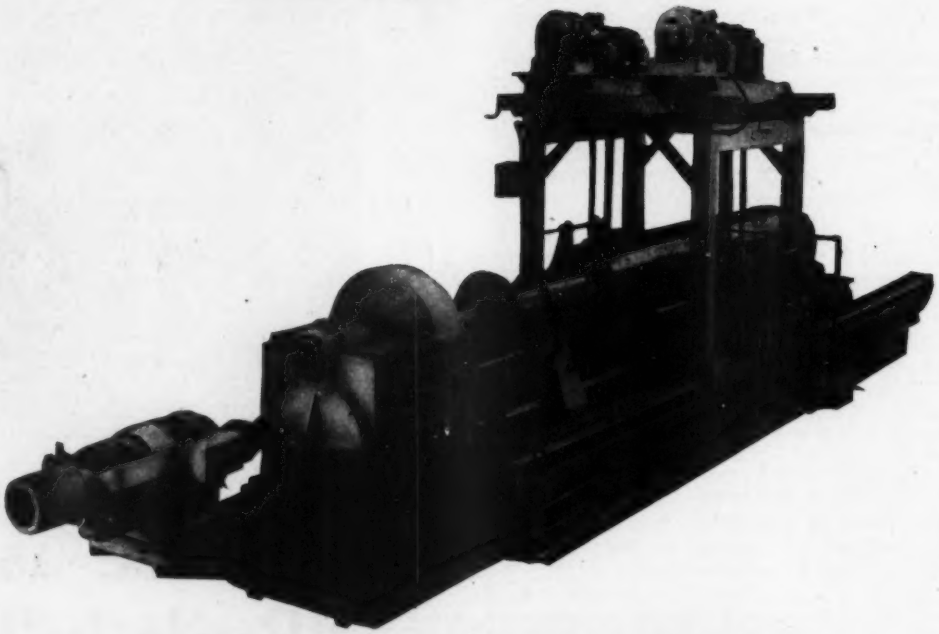
1. Only the best grade of materials are used.
2. Highest class of workmanship is maintained throughout.
3. All pieces are precision-made.
4. Heavily and durably constructed.
5. All equipment is built for longer life.

Let us tell you why Manitowoc paper mill equipment will give you increased production at lowest operating costs. Write for details.

Manitowoc Engineering Works
Manitowoc, Wisconsin

MANITOWOC

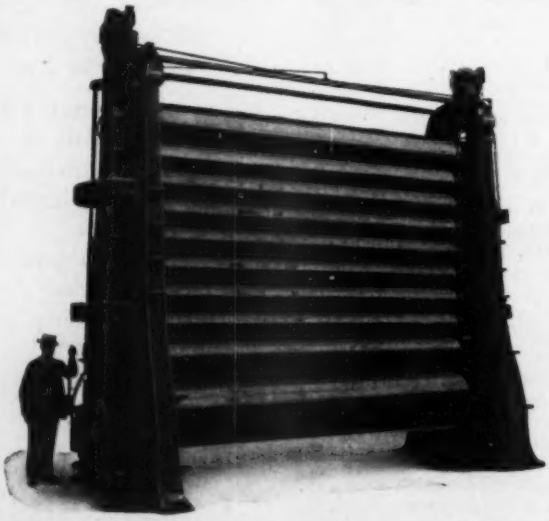
FARREL



FARREL 32" NEW TYPE ROLL GRINDER

These machines are also built in 24", 36" and 42" sizes, all with New Crowning Device, Geared Head, Automatic Lubrication and other improvements.

FARREL CALENDERS
are made with
HYDRAULIC,
ELECTRIC
or
RATCHET
LIFT
All operated from the floor



FARREL CALENDER ROLLS

are made in all sizes, including the largest ever made. Known all over the world as the best rolls obtainable.

FARREL FOUNDRY & MACHINE CO.

ESTABLISHED 1848

ANSONIA, CONN.

Branch Plant, BUFFALO, N. Y.

Buyers' Guide—What and Where to Buy

Equipment, Apparatus, Supplies and Raw Materials Used by the Paper Industry

Adhesives
Corn Products Refin'g Co.
E. F. Russ Co.

Acid Resisting Bronze
Eastwood Wire Mfg. Co.
William & Hardy & Sons.

Agitator Equipment
The Biggs Boiler Wks. Co.
Hill Clutch M. & F. Co.
Manitowoc Engrg. Wks.
Moore & White Co.
Noble & Wood Mach. Co.
Riter-Conley Co.
The Shartle Bros. M. Co.
John Waldron Corp.

Air Compressors
Ingersoll-Rand Co.
J. T. Ryerson & Son, Inc.

Air Compressors (Cent.)
Allis-Chalmers Co.
General Electric Co.

Air Cond'g & Control App.
J. O. Ross Eng. Corp.

Air Dryers and Heaters
J. O. Ross Eng. Corp.
Am. Voith Contact Co.
John Waldron Corp.

Air Filters
Drying Systems, Inc.

Air Presses
Gibbs-Brower Co.
Hudson-Sharp Mach. Co.

Air Washers
J. O. Ross Eng. Corp.

Alkali
Diamond Alkali Co.
The Mathieson Alkali Works
Michigan Alkali Co.
Solvay Process Co.

Angle Valves
Eastwood Wire Mfg. Co.
The Lunkenheimer Co.

Aprons (Fourdrinier)
The B. F. Goodrich Rubber Co.
Morey Paper Mill Supply Co.

Architects
James L. Carey.
Ferguson Engineers.
Hardy S. Ferguson.
George P. Hardy.
V. D. Simons.
Jos. H. Wallace & Co.

Ash Testers
Foreign Paper Mills, Inc.

Assorting Tables
Moore and White Co.

Autoclaves
The Biggs Boiler Wks. Co.
Manitowoc Eng. Works.
Riter-Conley Co.

Babbitt Metal
Eastwood Wire Mfg. Co.
Jos. T. Ryerson & Son, Inc.

Barkers
Holyoke Mach. Co.

Barking Drums (Paulson)
Manitowoc Eng. Works.

Bearings
Jeffrey Mfg. Co.
The Hill Clutch Mach. & Fdy. Co.
T. B. Wood Sons Co.

Bearings (Babbitt)
Jos. T. Ryerson & Son, Inc.

Bearings (Ball)
S. K. F. Industries.

Bearings (Cutless Rubber)
B. F. Goodrich Rubber Co.
Hill Clutch Mach. & Fdy. Co.

Bearings (Roller)
Link-Belt Company.
Timken Roller Bearing Co.

Beaters (Continuous)
The Shartle Bros. Machine Co.

Beater Rolls
Noble & Wood Machine Co.

Beater Bed Plates
Noble & Wood Machine Co.

Beater Fly Bars
Noble & Wood Machine Co.

Beating, Washing and Bleaching Engines
Dayton Beater & Hoist Co.
Dayton Globe Iron Works.
Dilts Mach. Works, Inc.
Gibbs-Brower Co.
Holyoke Mach. Co.
Noble & Wood Mach. Co.

Beating Testers
Foreign Paper Mills, Inc.

Belt Dressing
Graton & Knight Co.

Belt Drives
Hill Clutch Mach. & Fdy.
The Jeffrey Mfg. Co.
Link-Belt Company.
P. L. Smidth & Co.
T. B. Wood's Sons Co.

Belt Fasteners
The Bourne-Fuller Co.
Crescent Belt Fastener Co.

Belt Lacing
Graton & Knight Co.
Schieren Co., Chas. A.

Belting
Morey Paper Mill Supply Co.

Belting (Leather)
Chicago Belting Co.
Graton & Knight Co.
E. F. Houghton & Co.
J. E. Rhoads & Sons.
Schieren Co., Chas. A.
I. B. Williams & Sons.

Belting (Rubber)
B. F. Goodrich Rub. Co.
Morey Paper Mill Supply Co.

Belting (Silent Chain)
Link-Belt Company.

Bindersboard Machines
Gibbs-Brower Co.
Noble & Wood Mach. Co.

Blotting Paper Testers
Foreign Paper Mills

Bleaching Boilers
The Biggs Boiler Works Co.
Manitowoc Eng. Works.

Bleaching Powder
The Mathieson Alkali Works.
Pennsylvania Salt Mfg. Co.

Bleaching Processes
Pulp Bleaching Corp.

Bleaching (Propellers)
Moore and White Co.

Blowers
Ingersoll-Rand Co.
The Jeffrey Mfg. Co.
P. H. & F. M. Roots Co.
J. O. Ross Eng. Corp.
Jos. T. Ryerson & Son. Inc.

Blowers (Centrifugal)
Drying Systems, Inc.
General Electric Co.

Blow-Off Valves
Eastwood Wire Mfg. Co.
The Lunkenheimer Co.

Blow Pipes (Water Jacketed)
Manitowoc Eng. Works.

Board Machines
Beloit Iron Works.
Black-Clawson Co.
Gibbs-Brower Co.

Board Scales
Foreign Paper Mills, Inc.

Boilers
Edge Moor Iron Co.
Manitowoc Eng. Works.

Boiler Compounds
Garratt-Callahan Co.

Boiler Mountings
The Lunkenheimer Co.

Boiler Tubes & Fittings
Jos. T. Ryerson & Son, Inc.

Brass Wire Cloth
Appleton Wire Works.
Wm. Cabble Excelsior Wire Mfg. Co.
Cheney Bigelow Wire Works.
Eastwood Wire Mfg. Co.
Lindsay Wire Weaving Co.
W. S. Tyler Co.

Brimstone
Union Sulphur Co.

Bronze Castings
Eastwood Wire Mfg. Co.

Buckets (Clamshell)
Industrial Works.

Buckets (Elevator)
The B. F. Goodrich Rubber Co.
The Jeffrey Mfg. Co.
Link-Belt Company.

Burrs
F. W. Roberts Mfg. Co.

Calenders
Beloit Iron Works.
Dominion Engineer. Wks., Ltd.
Downington Mfg. Co.
Farrel Fdy. & Mach. Co.
Gibbs-Brower Co.
Holyoke Mach. Co.
Lobdell Car Wheel Co.
B. F. Perkins & Son, Inc.
Smith & Winchester Mfg. Co.
John Waldron Corp.

Calender Doctors
Beloit Iron Works.

Calender Rolls
H. W. Butterworth & Sons Co.
Farrel Fdy. & Mach. Co.
Gibbs-Brower Co.
Lobdell Car Wheel Co.
B. F. Perkins & Son. Inc.

Calender Roll Grinders
Farrel Fdy. & Mach. Co.
Lobdell Car Wheel Co.

Car Pullers
Swenson Evaporator Co.

Casein
Kalbfleisch Corp.

Castings (Brass)
Eastwood Wire Mfg. Co.
Noble & Wood Mach. Co.
Smith & Winchester Mfg. Co.

Castings (Grey Iron)
Beloit Iron Works.
Hill Clutch Mach. & Fdy. Co.
Link-Belt Company.
Jeffrey Mfg. Co.
Noble & Wood Mach. Co.
Smith & Winchester Mfg. Co.

Castings (Steel & Semi-Steel)
Link-Belt Company.

Caustic Soda
Diamond Alkali Co.
Michigan Alkali Co.
The Mathieson Alkali Works.
Solvay Process Co.

Chains
The Jeffrey Mfg. Co.
Link-Belt Company.
Joseph T. Ryerson & Son. Inc.

Chain Drives
Grant Gear Works.
The Jeffrey Mfg. Co.
Link-Belt Company.

Chemicals
Diamond Alkali Co.
Kalbfleisch Corp., The
The Mathieson Alkali Works.
Michigan Alkali Co.
Solvay Process Co.
Western Paper Makers' Chem. Co.

Chippers
Gibbs-Brower Co.
Holyoke Mach. Co.
Ryther & Pringle Co.

Chlorine (Liquid)
Electro Bleaching Gas Co.
Mathieson Alkali Wks., Inc.
Penn. Salt Mfg. Co.

Clays and Fillers
English China Clays Sales Corp.
Kalbfleisch Corp.
Paper Makers Importing Co.

Clay Mixers
Manitowoc Eng. Works.

Clay Sifters
Rotospray Mfg. Co.

Cleaning Material
Oakite Products, Inc.

Coal Bunkers
Link-Belt Company.

Coal & Ash Handling Systems
Industrial Works.
The Jeffrey Mfg. Co.
Link-Belt Company.

Coated Papers
Watervliet Paper Co.

Coating Machines
Gibbs-Brower Co.
John Waldron Corp.

Cocks
Eastwood Wire Mfg. Co.
The Lunkenheimer Co.

Concrete Reinforcing Steel
Joseph T. Ryerson & Son, Inc.

Condensers
Ingersoll-Rand Co.

Conditioning Ovens (Pulp)
Foreign Paper Mills, Inc.

Consulting Engineers
James L. Carey.
Hardy S. Ferguson.
Ferguson Engineers.
George P. Hardy.
V. D. Simons.
Jos. H. Wallace & Co.

Consult'g Engineers (Pow.)
Ferguson Engineers.
V. D. Simons.

Contractors (Building)
The Austin Co.

Conveyors
Allis-Chalmers Co.
H. W. Caldwell & Sons Co.
The Jeffrey Mfg. Co.
Link-Belt Company.

Conveyors (Belt)
The B. F. Goodrich Rubber Co.
The Jeffrey Mfg. Co.
Link-Belt Company.

Corduroy Wire Cloth
The W. S. Tyler Co.

Cores (Collapsible)
Smith & Winchester Mfg. Co.

Corrugated Steel Sheets
Joseph T. Ryerson & Son, Inc.

Couch Rolls
Dominion Eng. Wks., Ltd.
Rodney Hunt Mach. Co.
The Paper & Textile Machinery Co.

Couplings
Wm. Ganschow Co.
Hill Clutch Mach. & Fdy. Co.
D. O. James Mfg. Co.
Link-Belt Company.
W. H. Nicholson & Co.
John Waldron Corp.
T. B. Wood Sons Co.

Couplings (Flexible Shaft)
W. H. Nicholson & Co.

Couplings (Compres. Shaft)
W. H. Nicholson & Co.

Cranes (Crawling Tractor)
Industrial Works.
Link-Belt Company.

Cranes (Dipper Arm)
Am. Hoist & Derrick Co.
Industrial Works.
Link-Belt Company.

Cranes (Electric)
Link-Belt Company.
Roeper Crane & Hoist Works, Inc.
Swenson Evaporator Co.

Cranes (Hand Power)
Roeper Crane & Hoist Works, Inc.
Swenson Evaporator Co.

Cranes (Locomotive)
Am. Hoist & Derrick Co.
Link-Belt Company.
Industrial Works.

Creosoting Cylinders
Biggs Boiler Works Co.
Manitowoc Eng. Wks.

Crepe Machines
Gibbs-Brower Co.
Hudson-Sharp Mach. Co.

Crushers (Coal and Coke)
The Jeffrey Mfg. Co.
Link-Belt Company.

Cutters
Beloit Iron Works.
Cameron Machine Co.
Holyoke Mach. Co.
Smith & Winchester Mfg. Co.

Cylinder Machines
Beloit Iron Works.
Downingtown Mfg. Co.
Gibbs-Brower Co.
The Shartle Bros. Mach. Co.
Smith & Winchester Mfg. Co.

Cylinder Molds (New or Repaired)
Appleton Wire Works.
Beloit Iron Works.
Cheney Bigelow Wire Works.
Eastwood Wire Mfg. Co.
Gibbs-Brower Co.
Glens Falls Mach. Works.
Improved Paper Mach. Co.
The Lindsay Wire Weaving Co.
The W. S. Tyler Co.

Dampeners
B. F. Perkins & Son, Inc.

Damper Regulators (Automatic)
Eastwood Wire Mfg. Co.

Dandy Rolls
Appleton Wire Works.
Central Mfg. Co.
Cheney Bigelow Wire Works.
Eastwood Wire Mfg. Co.
Lindsay Wire Weaving Co.
The W. S. Tyler Co.

Deckers and Washers
Improved Paper Mach. Co.
Oliver Cont. Filter Co.
United Filters Corp.

Deckle Straps
Stowell & Woodward Co.

Densometers
Foreign Paper Mills, Inc.

Die Presses
Smith & Winchester Mfg. Co.

Diffusers
Manitowoc Eng. Works.

Digesters
The Biggs Boiler Wks. Co.
Manitowoc Eng. Works.
Riter-Conley Co.

Digester Covers
Eastwood Wire Mfg. Co.

Digester Linings
Stebbins Eng. & Mfg. Co.

Doctor Blades
B. F. Goodrich Rub. Co.

Drainage Systems (Dryer)
The Fulton Eng. Co.
Stickle Steam Specialties Co.

Drum Winders (Drives)
Beloit Iron Works.
Gibbs-Brower Co.
John Waldron Corp.

Dryers
Beloit Iron Works.
Smith & Winchester Mfg. Co.

Dryers (Heavy Board)
Coe Mfg. Co.

Dryers (Rotary)
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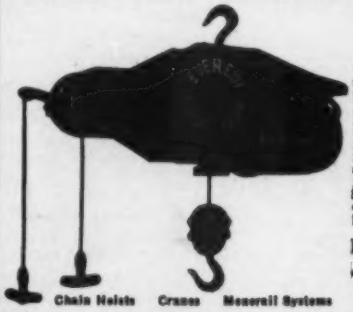

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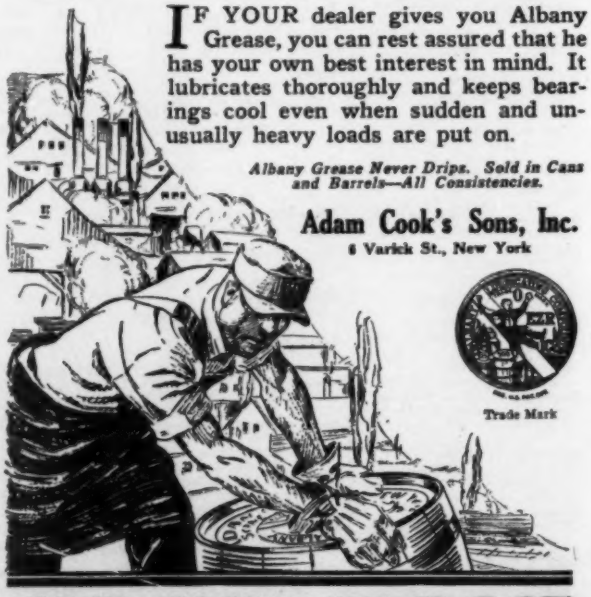

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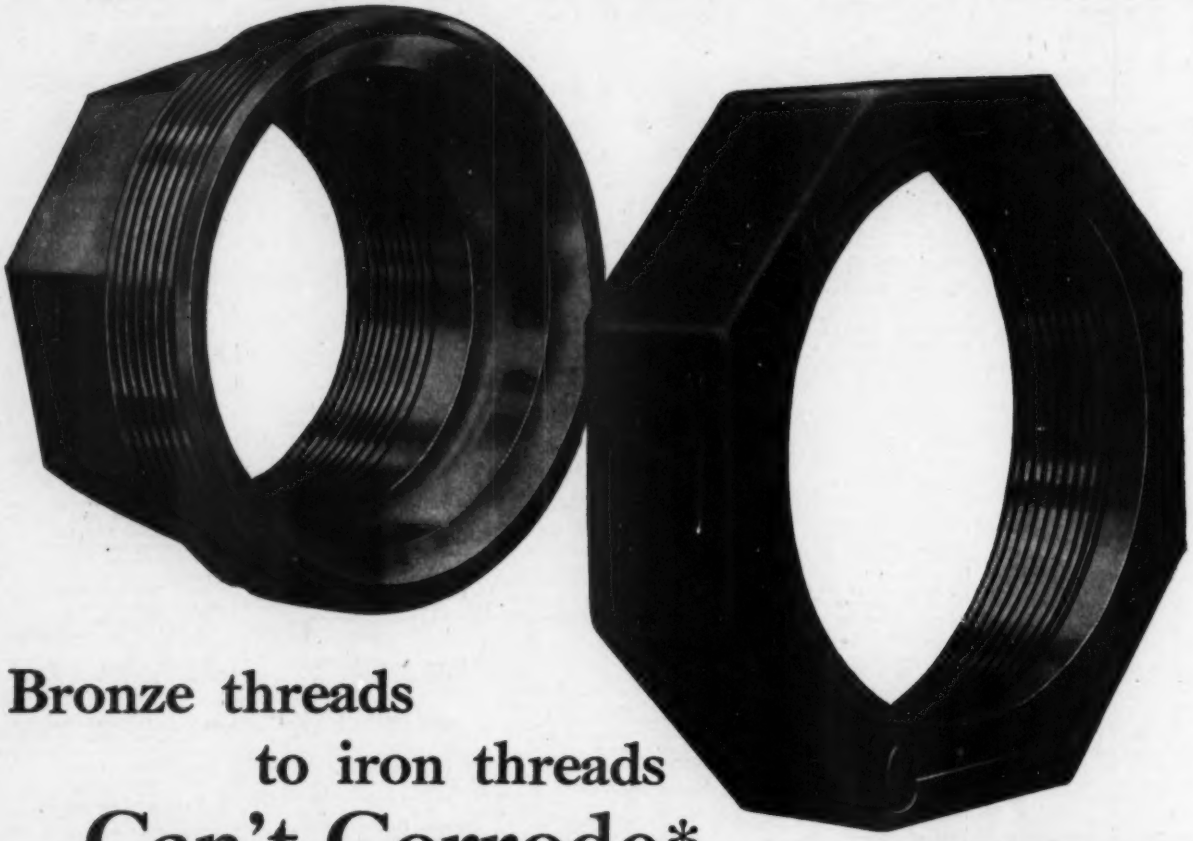

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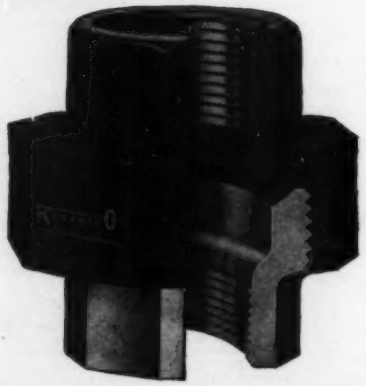

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Allis-Chalmers Co.
Green Bay Foundry & Machine Works.
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Foreign Paper Mills, Inc.

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Screens (Perforated Metal)
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Screens (Centrifugal)
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Screens (Woven Wire)
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Screen Plates
Central Mfg. Co.
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Sedimentation Testers
Foreign Paper Mills, Inc.

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W. H. Nicholson & Co.

Shafting
Allis-Chalmers Co.
Hill Clutch Mach. & Fdy. Co.
Link-Belt Co.
Joseph T. Ryerson & Son, Inc.
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Bethlehem Steel Co.
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Beloit Iron Works.
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Benjamin Electric Co.

Size
Kalbfleisch Corp., The Western Paper Makers' Chem. Co.

Sizing, Testers
Foreign Paper Mills, Inc.

Slitters
Gibbs-Brower Co.
Chas. Koegel's Sons, Inc.

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Beloit Iron Works.
Cameron Machine Co.
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Samuel M. Langston Co.
Meisel Press Mfg. Co.
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Soda Ash
Diamond Alkali Co.
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The Mathieson Alkali Works.
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Special Machinery
Beloit Iron Works.
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Speed Changes
Moore & White Co.
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Wm. Ganschow Co.
Grant Gear Works.
Hill Clutch Mach. & Fdy. Co.
D. O. James Mfg. Co.
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Speed Reduction Units
De Laval Steam Turbine Co.
Grant Gear Works.
Hill Clutch Mach. & Fdy. Co.

Spiral Gears
Wm. Ganschow Co.
Grant Gear Works.
D. O. James Mfg. Co.

Sprockets
Grant Gear Works.
The Jeffrey Mfg. Co.
Link-Belt Co.

Stacks
The Biggs Boiler Works Co.
Manitowoc Eng. Works.
Ritter-Conley Co.

Starch
Corn Products Refining Co.

Steam Accumulators
Combustion Engineering Corp., Ltd.

Steam Regulators (For Dryers)
W. F. Pickles.
The Fulton Eng. Co.

Steel (Bars, Shapes, Plates, Sheets, Etc.)
Joseph T. Ryerson & Son, Inc.

Steel Plate Construction
The Biggs Boiler Works Co.
Manitowoc Eng. Works.
Ritter-Conley Co.

Stokers
American Eng. Co.
Combustion Eng. Corp.
Combustion Eng. Corp., Ltd.

Storage Tanks (Steel)
The Biggs Boiler Works Co.
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Stuff Chests
Gibbs-Brower Co.
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Stuff Pumps
Beloit Iron Works.
Gibbs-Brower Co.
Hauser-Stander Tank Co.
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Ingersoll-Rand Co. (A. S. Cameron Steam Pumps).
Noble & Wood Mach. Co.

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General Chemical Co.
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The Borregaard Co., Inc.
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Manitowoc Eng. Works.
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Biggs Boiler Works Co.
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Biggs Boiler Works Co.
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Tanks (Jacketed)
Biggs Boiler Works Co.
Manitowoc Eng. Works.

Tanks (Steel Welded)
American Spiral Pipe Works.
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Tanks (Wood)
Hauser-Stander Tank Co.

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The B. F. Goodrich Rubber Co.

Tensile Strength and Stretch Testers
Foreign Paper Mills, Inc.

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Foreign Paper Mills, Inc.

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Allis-Chalmers Co.
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Crane Co.
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Lunkenheimer Co., The
The Wm. Powell Co.
Walworth Co.

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Eastwood Wire Mfg. Co.
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Valves (Digester)
Eastwood Wire Mfg. Co.

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Cutler-Hammer Mfg. Co.
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B. F. Goodrich Rubber Co.

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Eastwood Wire Mfg. Co.
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Eastwood Wire Mfg. Co.

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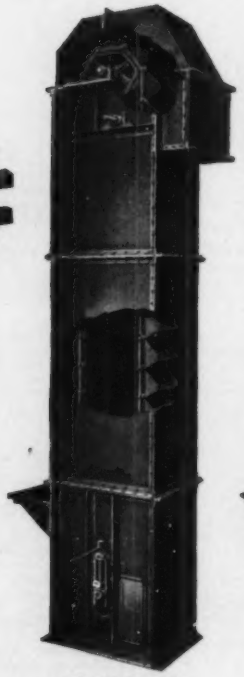

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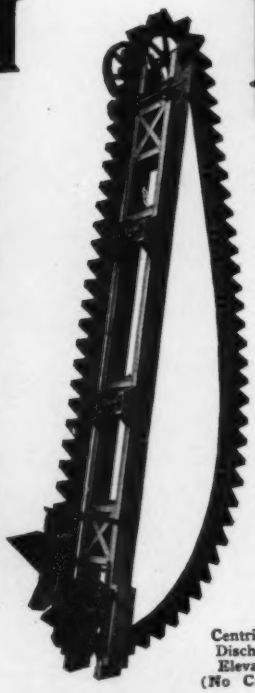

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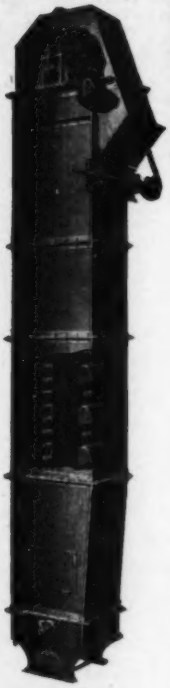

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Alphabetical Index to Our Advertisers

When writing them, please mention The Paper Industry

Abendroth & Root Mfg. Co.....2102
Albany Felt Co. 2037
Alberene Stone Co. 2028
Allied Paper Mills 2218
Allis Chalmers Co. 2240
American Engineering Co. 2116
American Hoist & Derrick Co.....2257
American Spiral Pipe Works.....2040
American Steam Pump Co. 2124
American Telephone & Telegraph Co..2064
American Voith Contact Co.....2060
Anderson & Co., J.....2287
A. P. W. Paper Co. 2090
Appleton Wire Works 2054
Appleton Woolen Mills 2026
Austin Co., The .....Inside Back Cover

Bagley & Sewall Co. 2120
Badger & Sons Co., E. B.....2272
Baker Mfg. Corp. 2032
Baker Perkins Co. 2122
Bedford Pulp & Paper Co.....2256
Belfield Co., H. 2124
Beloit Iron Works 2118-2119
Bethlehem Steel Co. 2244
Bigelow Wire Works, Cheney.....2096
Biggs Boiler Works Co., The.....2204
Bird Machine Co. 2023
Black-Clawson Co., The.....2036
Blaw-Knox Co. 2272
Borregaard Co., Inc., The.....2287
Bourne-Fuller Co., The.....2276
Bowser & Co., Inc., S. F.....2241
Bristol Co., The 2261
Brown Instrument Co. 2219-2220
Brown Paper Co., L. L.....2092
Bryant Paper Co. 2214
Buffalo Steam Pump Co.....2216
Bulkley, Dunton & Co. 2098
Butterworth & Sons Co., H. W.....2126
Byers Co., A. M. 2034

Cabble Excelsior Wire Mfg. Co., The Wm. 2128
H. W. Caldwell & Sons Co.....2046
Cameron Machine Co.....2057
Cameron Steam Pump Works (Ingersoll-Rand Co.) 2158-2159
Carey, James L.....2274
Carlyle Johnson Mach. Co., The.....2244
Central Manufacturing Co. 2290
Central Ohio Paper Co., The.....2096
Cheney Bigelow Wire Works.....2096
Cheney Pulp & Paper Co.....2289
Chicago Belting Co. 2044
Cleveland Worm & Gear Co., The.....2042
Coe Mfg. Co., The.....Inside Front Cover
Combustion Engineering Corp.....2035
Connersville Blower Co., The.....2048
Cook's Sons, Inc., Adam.....2296
Corn Products Refining Co.....2289
Coward & Coward 2252
Crane Co. 2130
Crescent Belt Fastener Co. 2262
Cutler-Hammer Mfg. Co. 2027-2039

Darling Valve & Mfg. Co.....2263
Davis Co., Frank H. 2264
Davis Regulating Co., G. M.....2132
Dayton Beater & Hoist Co.....2291
DeLaval Steam Turbine Co.....2063
Diamond Alkali Co. 2286
Dilts Machine Works, Inc.....2134
The Dorr Co. 2188
Dominion Eng. Works, Ltd.....2234
Downington Mfg. Co. 2138, 2139
Draper Bros. Co. 2136
Drying Systems, Inc. 2248

Eastwood Wire Manufacturing Co....2140
Edge Moor Iron Co. 2049
Electro Bleaching Gas Co.....2016
Elwell-Parker Electric Co. 2056
Enterprise Machine Co. 2055

Farrel Foundry & Mach. Co.....2294
Ferguson, Hardy S. 2276
Ferguson Engineers 2274
Fitchburg Duck Mills 2252
Fitchburg Paper Co. 2098
Foreign Paper Mills, Inc. 2266
Frederick Iron & Steel Co.....2265
Fulton Engineering Co., The.....2240

Ganschow Co., Wm. 2255
Garratt-Callahan Co. 2244
Gatti Paper Stock Corp. 2288
General Chemical Co. 2278
General Dyestuff Corp 2279
General Electric Co. 2010, 2011
Gerrard Wire-Tying Machines Co.....
Gibbs-Brower Co. 2001, 2264
Glens Falls Machine Works.....2058
Goodrich Rubber Co., B. F.....2047
Goulds Pumps, Inc. 2039
Grant Gear Works 2146
Graton & Knight Co. .....Front Cover
Green Bay Fdy. & Mach. Works.....2258

Hamblet Machine Co. 2268
Hammermill Paper Co. 2238
Hardy, George F. 2250
Hardy & Sons, Wm. A.....2290
Hauser-Stander Tank Co., The.....2262
Healy-Ruff Co. 2063
Hercules Powder Co. 2227
Hill Clutch Mach. & Foundry Co.....2296
Hockley, C. C. 2274
Holyoke Mach. Co. 2148
Hooper & Sons Co., Wm. E.....2150
Houghton & Co., E. F.....2154
Hummel-Ross Fibre Corp. 2256
Hungerford & Terry, Inc.....2248
Hunt Machine Co., Rodney 2150
Huyck & Sons, F. C.....2152

Improved Paper Machinery Co.....2222
Industrial Works 2156
Ingersoll-Rand Company (A. S. Cameron Steam Pump Works.)....2158, 2159
International Salt Co., Inc. 2282

James Mfg. Co., D. O. 2033
Jasmine Ink Corp 2264
Jeffrey Mfg. Co., The.....2160
Jenkins Bros. 2248
Jenssen Co., G. D.....2274
Johaneson, Wales & Sparre, Inc.....2020
Jones Foundry & Machine Co., W. A..2050
Jones Bros. Co. 2242

Kalamazoo Vegetable Parchment Co..2282
Kalbfleisch Corporation, The 2100, 2101
Kimberly-Clark Co. 2106
Knox Woolen Co. 2162
Koegel's Sons, Inc., Chas.....2268

Lagerloef Trading Co., Inc.....2280
Langston Co., Samuel M.....2186
Lawrence Mach. Co. 2258
Lawrence Pump & Engine Co.....2249
Layne & Bowler Mfg. Co.....2270
Lefren, Karl A. 2246
Leshner Paper Stock Corp.....2288
Lindsay Wire Weaving Co., The.....2062
Link-Belt Company 2300
Little, Inc., Arthur D. 2274
Lobdell Car Wheel Co. 2104
Lockport Felt Co. 2252
Logan-Logan 2264
Lunkenheimer Co., The.....2245

Manitowoc Engineering Works.....2293
Marathon Paper Mills Co.....2192
Mathieson Alkali Works, Inc.....2003
McBain, B. T. 2274
McDowell Paper Mills 2260
Meisel Press Mfg. Co.....2296
Michigan Alkali Co. 2281
Michigan Pipe Co. 2194
Mills Machine Co. 2276
Mitts & Merrill 2286
Moore & White Co. 2014, 2015
Moore Steam Turbine Corp.....2244
Morey Paper Mills Supply Co.....2290
Mundt & Sons, Charles 2290

Nash Engineering Co., The.....2242
National Safety Council 2302
Naylor Spiral Pipe Co. 2009
Nekoosa-Edwards Paper Co.....2200
Niagara Alkali Co. 2281
Nicholson & Co., W. H. 2274
Nitrose Co., The 2053
Noble & Wood Mach Co. 2041
Norton Co. 2022
Norwood Engineering Co. 2259

Oakite Products, Inc. 2247
Ohio Grease Co., The 2244
Oliver Continuous Filter Co.....2226

Paper Makers Importing Co., Inc.....2253
Paper Makers Chemical Co.....2284
Paper Mills Supply Co.....2288
Paper & Textile Machinery Co.....2212
Paterson Parchment Paper Co.....2228
Patten Paper Co., Ltd.....2260
Pennsylvania Salt Mfg. Co.....2114
Perkins-Goodwin Co. 2108
Perkins & Son Co., Inc., B. F.....2164
Permutit Co., The 2043
Pickles, W. F. 2244
Pittsburgh Piping & Equipment Co...2274
Powell Co., The Wm. 2258
Power Specialty Co. 2051
Price & Pierce 2018
Pulp Bleaching Corp 2059
Pulp & Paper Trading Co. 2287
Pusey & Jones Corp 2166

Reading Chain & Block Corp.....2296
Reeves Pulley Co. 2251
Rhinelander Paper Co. 2232
Rhoads & Sons, J. E. 2249
Rice, Barton & Fales 2168
Riter-Conley Co. 2248
Roberts Mfg. Co., F. W.....2262
Roeper Crane & Hoist Works, Inc....2296
Rollins Engine Co. 2094
Roots Co., P. H. & F. M.....2170
Ross Engineering Corp., J. O.....2198
Rotospray Mfg. Co. 2239
Russ Company, E. F. 2288
Ryerson & Sons, Joseph T. 2172
Ryther & Pringle Co., The.....2210

Sandy Hill Iron & Brass Works.....2302
Schieren Co., Chas. A.....Back Cover
Seaman Paper Co. 2224
Shartle Bros. Machine Co.....2254
Shuler & Benninghofen 2038, 2290
Simonds Saw & Steel Co.....2268
Simonds, V. D. 2274
Simplex Valve & Meter Co.....2270
S. K. F. Industries 2012, 2013
Smidth & Co., F. L.....2061
Smith & Co., S. Morgan 2110
Smith & Winchester Mfg. Co.....2173
Solvay Sales Corp 2279
Southwark Foundry & Machine Co...2104
Standard Oil Co. 2025
Stebbins Eng. & Mfg. Co.....2292
Stickle Steam Specialties Co.....2008
Stowe & Woodward Co. 2262
St. Regis Paper Co. 2196
Sutherland, D. Manson, Jr.....2274
Swenson Evaporator Co. 2052

T. A. P. P. I. 2248
Taylor, H. S. 2274
Taylor, Stiles & Co. 2142
Terry Steam Turbine Co., The.....2031
Texas Gulf Sulphur Co. 2029
Thomas H. Savery, Jr. 2202
Tileston & Holingsworth Co.....2114
Timken Roller Bearing Co., The.....2024
Trimbey Machine Works 2252
Tyler Company, The W. S. 2246

Union Bag & Paper Corp. 2230
Union Machine Co. 2172
Union Screen Plate Co. 2290
U. S. Cast Iron Pipe & Fdy. Co.....2005
United Filters Corp. 2206

Vortex Mfg. Co., The.....2045

Wailes Dove-Hermiston Corp.....2250
Waldron Corp., John 2144
Walmsley & Co., Ltd., Chas.....2236
Walworth Co. 2298
Warren Mfg. Co. 2112
Warren Steam Pump Co., Inc.....2243
Waterbury Felt Co. 2004
Waterbury Tool Co. 2190
Watervliet Paper Co. 2260
Wausau Sulphate Fibre Co. 2208
Westinghouse Electric & Mfg. Co... .....2006, 2007
Williams & Sons, I. B. 2185
Wisconsin Wire Works 2248
Wood Son Co., T. B. 2174, 2176
Wyckoff & Son, A. 2244

Zaremba Co. 2292

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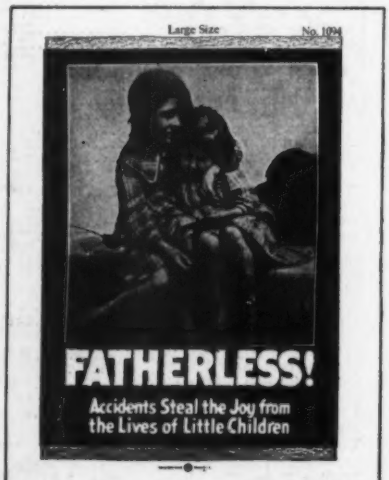

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